STIC Search Report
EIC 1700

STIC Database Tracking Number: 147634

TO:	From:
Camie Thompson Location: 10D28 Art Unit : 1774 March 24, 2005 Case Serial Number: 10/724062	Les Henderson Location: EIC 1700 REM 4B28 / 4A30 Phone: 571-272-2538 Leslie.henderson@uspto.gov

Search Notes

JP 2001-303641

STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

Access DB# 147664

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Camie Thompson Examiner #: 79244 Date: 3/13/05
Art Unit: 1774 Phone Number 30[illegible]530 Serial Number: 10/724,062
Mail Box and Bldg/Room Location: 10D58 Results Format Preferred (circle): PAPER DISK E-MAIL
Remsen

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Phosphor of warm luminous color + fluorescent display

Inventors (please provide full names): Takuya Hamada; Takao Sakuraga, Hirokazu Takanashi; Hitoshi Tosaki

Earliest Priority Filing Date: 12/2/02

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please do a search on claims 1-14

Thanks

L7

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STAFF USE ONLY

Searcher: _____
Searcher Phone #: _____
Searcher Location: _____
Date Searcher Picked Up: _____
Date Completed: _____
Searcher Prep & Review Time: 30
Clerical Prep Time: 30
Online Time: 240

Type of Search

NA Sequence (#) _____
AA Sequence (#) _____
Structure (#) _____
Bibliographic ✓
Litigation _____
Fulltext _____
Patent Family _____
Other _____

Vendors and cost where applicable

STN ~~$ 1,064.35~~ 1,332.79 8/4
Dialog _____
Questel/Orbit _____
Dr.Link _____
Lexis/Nexis _____
Sequence Systems _____
WWW/Internet _____
Other (specify) _____

PTO-1590 (8-01)

What is claimed is:

1. A mixture phosphor comprising:

a phosphor of a red luminous color devoid of Cd; and

a phosphor of a green family luminous color devoid of Cd,

wherein a luminous color of the mixture phosphor is one of warm colors ranging from greenish yellow, yellow, yellowish orange, orange and reddish orange and red.

2. The mixture phosphor of claim 1, wherein the phosphor of the red luminous color is a $SrTiO_3$-based phosphor.

3. The mixture phosphor of claim 1, wherein the phosphor of the red luminous color is $SrTiO_3$:Pr.

4. The mixture phosphor of claim 1, wherein the phosphor of the red luminous color is $SrTiO_3$:Pr,Al.

5. The mixture phosphor of claim 1, wherein the phosphor of the green family luminous color is ZnS:Cu,Al phosphor or ZnS:Au,Al phosphor, and a mixing ratio of the phosphor of the green family luminous color is about 5 to about 70wt% of the mixture phosphor.

6. The mixture phosphor of claim 1, wherein the phosphor

of the green family luminous color is ZnS:Cu phosphor or ZnS:Cu,Au,Al phosphor, and a mixing ratio of the phosphor of the green family luminous color is about 5 to about 50wt% of the mixture phosphor.

7. The mixture phosphor of claim 1, wherein the phosphor of the green family luminous color is $ZnGa_2O_4$:Mn phosphor, and a mixing ratio of the phosphor of the green family luminous color is about 5 to about 50wt% of the mixture phosphor.

8. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 1 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

9. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 2 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

10. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 3 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

11. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 4 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

12. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 5 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

13. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 6 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

14. A fluorescent display device comprising:

a vacuum envelope including:

an anode electrode formed by pasting the phosphor of claim 7 on an anode conductor; and

an electron source, for radiating electrons, arranged in a vacuum envelope.

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     (FILE 'HOME' ENTERED AT 10:30:11 ON 24 MAR 2005)

     FILE 'HCA' ENTERED AT 10:30:31 ON 24 MAR 2005
                E US20040113131/PN
L1            1 SEA ABB=ON  PLU=ON  US20040113131/PN
                D SCAN
                D ALL
                SEL L1 RN

     FILE 'REGISTRY' ENTERED AT 10:31:45 ON 24 MAR 2005
L2            9 SEA ABB=ON  PLU=ON  (12060-59-2/BI OR 12064-18-5/BI OR
                12442-27-2/BI OR 1314-98-3/BI OR 7429-90-5/BI OR
                7439-96-5/BI OR 7440-10-0/BI OR 7440-50-8/BI OR 7440-57-5
                /BI)
                E 12064-18-5/RN
L3            1 SEA ABB=ON  PLU=ON  12064-18-5/RN
                D SCAN
                E 12060-59-2/RN
L4            1 SEA ABB=ON  PLU=ON  12060-59-2/RN
                D SCAN
                E 7440-57-5/RN
L5            1 SEA ABB=ON  PLU=ON  7440-57-5/RN
                D SCAN
                E 7440-50-8/RN
L6            1 SEA ABB=ON  PLU=ON  7440-50-8/RN
                D SCAN
                E 7440-10-0/RN
L7            1 SEA ABB=ON  PLU=ON  7440-10-0/RN
                D SCAN
                E 7439-96-5/RN
L8            1 SEA ABB=ON  PLU=ON  7439-96-5/RN
                D SCAN
                E 7429-90-5/RN
L9            1 SEA ABB=ON  PLU=ON  7429-90-5/RN
                D SCAN
                E 1314-98-3/RN
L10           1 SEA ABB=ON  PLU=ON  1314-98-3/RN
                D SCAN
L11           9 SEA ABB=ON  PLU=ON  (SR(L)TI(L)O(L)PR)/ELS(L)4/ELC.SUB
L12           0 SEA ABB=ON  PLU=ON  (SR(L)TI(L)O(L)PR(L)AL)/ELS(L)5/ELC.S
                UB
L13          38 SEA ABB=ON  PLU=ON  (SR(L)TI(L)O(L)AL)/ELS(L)4/ELC.SUB
L14           4 SEA ABB=ON  PLU=ON  (ZN(L)S(L)CU(L)AL)/ELS(L)4/ELC.SUB
L15           0 SEA ABB=ON  PLU=ON  (ZN(L)S(L)AU(L)AL)/ELS(L)4/ELC.SUB
L16          19 SEA ABB=ON  PLU=ON  (ZN(L)S(L)CU)/ELS(L)3/ELC.SUB
L17           3 SEA ABB=ON  PLU=ON  (ZN(L)S(L)AL)/ELS(L)3/ELC.SUB
L18           0 SEA ABB=ON  PLU=ON  (ZN(L)S(L)AU)/ELS(L)3/ELC.SUB
L19           0 SEA ABB=ON  PLU=ON  (ZN(L)S(L)CU(L)AL(L)AU)/ELS(L)5/ELC.S
                UB
L20          11 SEA ABB=ON  PLU=ON  (ZN(L)GA(L)O(L)MN)/ELS(L)4/ELC.SUB
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FILE 'HCA' ENTERED AT 11:00:32 ON 24 MAR 2005

L21 403 SEA ABB=ON PLU=ON L3

L22 608 SEA ABB=ON PLU=ON GALLIUM(W)ZINC(W)OXIDE OR GA2ZNO4OR ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4

L23 14136 SEA ABB=ON PLU=ON L4

L24 19908 SEA ABB=ON PLU=ON STRONTIUM#(A)TITANATE# OR SRTIO3

L25 147195 SEA ABB=ON PLU=ON L5

L26 251391 SEA ABB=ON PLU=ON GOLD OR AU

L27 480212 SEA ABB=ON PLU=ON L6

L28 1098393 SEA ABB=ON PLU=ON CU OR COPPER

L29 19596 SEA ABB=ON PLU=ON L7

L30 167708 SEA ABB=ON PLU=ON PRASEODYMIUM OR PR

L31 171501 SEA ABB=ON PLU=ON L8

L32 546903 SEA ABB=ON PLU=ON MANGANESE OR MN

L33 354400 SEA ABB=ON PLU=ON L9

L34 1324892 SEA ABB=ON PLU=ON AL OR ALUMINUM OR ALUMINIUM

L35 25460 SEA ABB=ON PLU=ON L10

L36 35413 SEA ABB=ON PLU=ON ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS

L37 9 SEA ABB=ON PLU=ON L11
D SCAN

L38 18 SEA ABB=ON PLU=ON PRASEODYMIUM(2A)STRONTIUM(2A)TITANIUM(2A)OXIDE OR (PR(2A)SR(2A)TI(2A)O)

L39 24 SEA ABB=ON PLU=ON L13

L40 96 SEA ABB=ON PLU=ON ALUMINUM(3A)STRONTIUM(3A)TITANIUM(3A)OXIDE OR (AL(3A)SR(3A)TI(3A)O)

L41 3 SEA ABB=ON PLU=ON L14
D SCAN

L42 386 SEA ABB=ON PLU=ON ALUMINUM(3A)COPPER(3A)ZINC(3A)SULFIDE OR (AL(3A)CU(3A)ZN(3A)S)

L43 40 SEA ABB=ON PLU=ON L16

L44 5447 SEA ABB=ON PLU=ON COPPER(3A)ZINC(3A)SULFIDE OR (CU(3A)ZN(3A)S)

L45 59 SEA ABB=ON PLU=ON L17

L46 1107 SEA ABB=ON PLU=ON ALUMINUM(3A)ZINC(3A)SULFIDE OR AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4

L47 17 SEA ABB=ON PLU=ON L20

L48 97 SEA ABB=ON PLU=ON GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)

L49 882677 SEA ABB=ON PLU=ON (EL OR E(W)L OR LED OR L(W)E(W)D OR OLED ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR ORG#)(2A)LUM!N? OR LIGHT?(2A)(EMIT? OR EMISSION? OR SOURCE?) OR LUMINES####### OR FLUORES? OR PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?

L50 132749 SEA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48))

L51 19687 SEA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)

L52 4388 SEA ABB=ON PLU=ON (CADMIUM OR CD)(3A)(ABSENT? OR ABSENC? OR NOT#(W)(PRESENT# OR ANY) OR MISSING? OR

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                LACK#### OR OMIT######## OR FREE###### OR WITHOUT#### OR
                DEVOID#)
L53           30 SEA ABB=ON  PLU=ON  L51 AND L52
L54          410 SEA ABB=ON  PLU=ON  VACUUM# AND ANOD? AND (ELECTRON#(2A)(
                SOURCE OR BEAM? OR RADIAT?))
L55            0 SEA ABB=ON  PLU=ON  L54 AND L53
L56            0 SEA ABB=ON  PLU=ON  L54 AND L52
L57       153415 SEA ABB=ON  PLU=ON  ELECTRON#(2A)(SOURCE OR BEAM? OR
                RADIAT?)
L58            1 SEA ABB=ON  PLU=ON  L57 AND L53
L59          410 SEA ABB=ON  PLU=ON  L57 AND L54
L60        45434 SEA ABB=ON  PLU=ON  CRT# OR (DISPLAY? OR ELECTROCHROMIC##
                 OR ORHOTOELECTROCHROMIC###)(2A)(DEVICE## OR UNIT##) OR
                (CATHODE## OR CATHODE#(A)RAY### OR TELEVISION#)(2A)(TUBE#
                # OR SCREEN# OR DISPLAY####)
L61        19527 SEA ABB=ON  PLU=ON  (COMP# OR COMPUTER## OR PORTABLE? OR
                LAPTOP? OR PLASMA## OR TV OR TELEVISION)(2A)(DISPLAY? OR
                SCREEN? OR MONITOR?)
L62            8 SEA ABB=ON  PLU=ON  (L60 OR L61) AND L53
                D QUE L51
                D QUE L59
L63            0 SEA ABB=ON  PLU=ON  L59 AND L52
L64           19 SEA ABB=ON  PLU=ON  (L60 OR L61) AND L52
L65           31 SEA ABB=ON  PLU=ON  (L60 OR L61) AND L59
                D QUE
L66            4 SEA ABB=ON  PLU=ON  L65 AND L51
                D SCAN
                D QUE L64
                D QUE L53
L67          961 SEA ABB=ON  PLU=ON  (L60 OR L61) AND L51
L68            8 SEA ABB=ON  PLU=ON  L67 AND L52
L69            4 SEA ABB=ON  PLU=ON  L67 AND L54
                D QUE
L70           34 SEA ABB=ON  PLU=ON  L53 OR L58 OR L62 OR L66 OR L68 OR
                L69
                D QUE
L71           42 SEA ABB=ON  PLU=ON  (L4 OR STRONTIUM#(A)TITANATE# OR
                SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                INTERSPER?)(3A)(PRASEODYMIUM OR PR OR L7)
L72           47 SEA ABB=ON  PLU=ON  (L4 OR STRONTIUM#(A)TITANATE# OR
                SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)
                D QUE L71
L73           21 SEA ABB=ON  PLU=ON  (L4 OR STRONTIUM#(A)TITANATE# OR
                SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)(3A)(PR
                ASEODYMIUM OR PR OR L7)
L74          811 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                INTERSPER?)(3A)(COPPER OR CU OR L6)
L75           38 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                INTERSPER?)(3A)(GOLD OR AU OR L5)
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L76          221 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                 E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                 INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)
L77           63 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                 E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                 INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(CO
                 PPER OR CU OR L6)
L78            8 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                 E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                 INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(GO
                 LD OR AU OR L5)
                 D QUE L71
                 D QUE L72
                 D QUE L73
                 D QUE L74
                 D QUE L75
                 D QUE L76
                 D QUE L77
                 D QUE L78
L79            6 SEA ABB=ON  PLU=ON  (L10 OR ZINC(A)(SULFIDE OR MONOSULFID
                 E) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR
                 INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(CO
                 PPER OR CU OR L6)(3A)(GOLD OR AU OR L5)
                 D QUE L48
L80           42 SEA ABB=ON  PLU=ON  (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXID
                 E OR (GA(3A)MN(3A)ZN(3A)O))(3A)(DOPE# OR DOPANT# OR
                 DOPING# OR TRACE# OR INTERSPER?)(3A)(MANGANESE OR MN OR
                 L8)
L81         1062 SEA ABB=ON  PLU=ON  (L71 OR L72 OR L73 OR L74 OR L75 OR
                 L76 OR L77 OR L78 OR L79 OR L80)
L82          846 SEA ABB=ON  PLU=ON  L81 AND L49
L83          244 SEA ABB=ON  PLU=ON  L82 AND L51
L84            2 SEA ABB=ON  PLU=ON  L83 AND L52
L85            0 SEA ABB=ON  PLU=ON  L83 AND L59
L86            0 SEA ABB=ON  PLU=ON  L83 AND L65
L87           37 SEA ABB=ON  PLU=ON  L83 AND (L60 OR L61)
L88            5 SEA ABB=ON  PLU=ON  L87 AND L57
                 D QUE L85
L89            0 SEA ABB=ON  PLU=ON  L87 AND L54
                 D QUE L87
L90           39 SEA ABB=ON  PLU=ON  L70 OR L84 OR L88
                 D QUE L90
     FILE 'HCA' ENTERED AT 14:35:25 ON 24 MAR 2005
L91        48085 SEA ABB=ON  PLU=ON  ELECTROLUM!N?
L92        21523 SEA ABB=ON  PLU=ON  L91 AND ((L21 OR L22 OR L23 OR L24
                 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32
                 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40
                 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48)
                 OR L81)
                 D QUE L50
                 D QUE L51
L93         3410 SEA ABB=ON  PLU=ON  L92 AND (RED# OR REDDISH OR YELLOW?
                 OR GREEN? OR ORANG?)
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L94           7 SEA ABB=ON  PLU=ON  L93 AND L52
L95           0 SEA ABB=ON  PLU=ON  L93 AND L58
L96          58 SEA ABB=ON  PLU=ON  L93 AND L57
L97           9 SEA ABB=ON  PLU=ON  L96 AND (L60 OR L61)
L98          44 SEA ABB=ON  PLU=ON  L94 OR L97 OR L90

=> => d que l98
L3            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12064-18-5/RN
L4            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12060-59-2/RN
L5            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-57-5/RN
L6            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-50-8/RN
L7            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-10-0/RN
L8            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7439-96-5/RN
L9            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7429-90-5/RN
L10           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  1314-98-3/RN
L11           9 SEA FILE=REGISTRY ABB=ON  PLU=ON  (SR(L)TI(L)O(L)PR)/ELS(
                L)4/ELC.SUB
L13          38 SEA FILE=REGISTRY ABB=ON  PLU=ON  (SR(L)TI(L)O(L)AL)/ELS(
                L)4/ELC.SUB
L14           4 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)CU(L)AL)/ELS(
                L)4/ELC.SUB
L16          19 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)CU)/ELS(L)3/E
                LC.SUB
L17           3 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)AL)/ELS(L)3/E
                LC.SUB
L20          11 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)GA(L)O(L)MN)/ELS(
                L)4/ELC.SUB
L21         403 SEA FILE=HCA ABB=ON  PLU=ON  L3
L22         608 SEA FILE=HCA ABB=ON  PLU=ON  GALLIUM(W)ZINC(W)OXIDE OR
                GA2ZNO4OR ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4
L23       14136 SEA FILE=HCA ABB=ON  PLU=ON  L4
L24       19908 SEA FILE=HCA ABB=ON  PLU=ON  STRONTIUM#(A)TITANATE# OR
                SRTIO3
L25      147195 SEA FILE=HCA ABB=ON  PLU=ON  L5
L26      251391 SEA FILE=HCA ABB=ON  PLU=ON  GOLD OR AU
L27      480212 SEA FILE=HCA ABB=ON  PLU=ON  L6
L28     1098393 SEA FILE=HCA ABB=ON  PLU=ON  CU OR COPPER
L29       19596 SEA FILE=HCA ABB=ON  PLU=ON  L7
L30      167708 SEA FILE=HCA ABB=ON  PLU=ON  PRASEODYMIUM OR PR
L31      171501 SEA FILE=HCA ABB=ON  PLU=ON  L8
L32      546903 SEA FILE=HCA ABB=ON  PLU=ON  MANGANESE OR MN
L33      354400 SEA FILE=HCA ABB=ON  PLU=ON  L9
L34     1324892 SEA FILE=HCA ABB=ON  PLU=ON  AL OR ALUMINUM OR ALUMINIUM

L35       25460 SEA FILE=HCA ABB=ON  PLU=ON  L10
L36       35413 SEA FILE=HCA ABB=ON  PLU=ON  ZINC(A)(SULFIDE OR MONOSULFI
                DE) OR ZNS
L37           9 SEA FILE=HCA ABB=ON  PLU=ON  L11
L38          18 SEA FILE=HCA ABB=ON  PLU=ON  PRASEODYMIUM(2A)STRONTIUM(2A
                )TITANIUM(2A)OXIDE OR (PR(2A)SR(2A)TI(2A)O)
L39          24 SEA FILE=HCA ABB=ON  PLU=ON  L13
L40          96 SEA FILE=HCA ABB=ON  PLU=ON  ALUMINUM(3A)STRONTIUM(3A)TIT
                ANIUM(3A)OXIDE OR (AL(3A)SR(3A)TI(3A)O)
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L41	3	SEA FILE=HCA ABB=ON PLU=ON L14
L42	386	SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)COPPER(3A)ZINC(3A)SULFIDE OR (AL(3A)CU(3A)ZN(3A)S)
L43	40	SEA FILE=HCA ABB=ON PLU=ON L16
L44	5447	SEA FILE=HCA ABB=ON PLU=ON COPPER(3A)ZINC(3A)SULFIDE OR (CU(3A)ZN(3A)S)
L45	59	SEA FILE=HCA ABB=ON PLU=ON L17
L46	1107	SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)ZINC(3A)SULFIDE OR AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4
L47	17	SEA FILE=HCA ABB=ON PLU=ON L20
L48	97	SEA FILE=HCA ABB=ON PLU=ON GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)
L49	882677	SEA FILE=HCA ABB=ON PLU=ON (EL OR E(W)L OR LED OR L(W)E(W)D OR OLED ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR ORG#)(2A)LUM!N? OR LIGHT?(2A)(EMIT? OR EMISSION? OR SOURCE?) OR LUMINES####### OR FLUORES? OR PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?
L50	132749	SEA FILE=HCA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48))
L51	19687	SEA FILE=HCA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)
L52	4388	SEA FILE=HCA ABB=ON PLU=ON (CADMIUM OR CD)(3A)(ABSENT? OR ABSENC? OR NOT#(W)(PRESENT# OR ANY) OR MISSING? OR LACK#### OR OMIT######## OR FREE###### OR WITHOUT#### OR DEVOID#)
L53	30	SEA FILE=HCA ABB=ON PLU=ON L51 AND L52
L54	410	SEA FILE=HCA ABB=ON PLU=ON VACUUM# AND ANOD? AND (ELECTRON#(2A)(SOURCE OR BEAM? OR RADIAT?))
L57	153415	SEA FILE=HCA ABB=ON PLU=ON ELECTRON#(2A)(SOURCE OR BEAM? OR RADIAT?)
L58	1	SEA FILE=HCA ABB=ON PLU=ON L57 AND L53
L59	410	SEA FILE=HCA ABB=ON PLU=ON L57 AND L54
L60	45434	SEA FILE=HCA ABB=ON PLU=ON CRT# OR (DISPLAY? OR ELECTROCHROMIC## OR ORHOTOELECTROCHROMIC###)(2A)(DEVICE## OR UNIT##) OR (CATHODE## OR CATHODE#(A)RAY### OR TELEVISION#)(2A)(TUBE## OR SCREEN# OR DISPLAY####)
L61	19527	SEA FILE=HCA ABB=ON PLU=ON (COMP# OR COMPUTER## OR PORTABLE? OR LAPTOP? OR PLASMA## OR TV OR TELEVISION)(2A)(DISPLAY? OR SCREEN? OR MONITOR?)
L62	8	SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L53
L65	31	SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L59
L66	4	SEA FILE=HCA ABB=ON PLU=ON L65 AND L51
L67	961	SEA FILE=HCA ABB=ON PLU=ON (L60 OR L61) AND L51
L68	8	SEA FILE=HCA ABB=ON PLU=ON L67 AND L52
L69	4	SEA FILE=HCA ABB=ON PLU=ON L67 AND L54
L70	34	SEA FILE=HCA ABB=ON PLU=ON L53 OR L58 OR L62 OR L66 OR L68 OR L69
L71	42	SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE# OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(PRASEODYMIUM OR PR OR L7)

L72	47	SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)
L73	21	SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)(3A)(PRASEODYMIUM OR PR OR L7)
L74	811	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(COPPER OR CU OR L6)
L75	38	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(GOLD OR AU OR L5)
L76	221	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)
L77	63	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(COPPER OR CU OR L6)
L78	8	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(GOLD OR AU OR L5)
L79	6	SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(COPPER OR CU OR L6)(3A)(GOLD OR AU OR L5)
L80	42	SEA FILE=HCA ABB=ON PLU=ON (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O))(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(MANGANESE OR MN OR L8)
L81	1062	SEA FILE=HCA ABB=ON PLU=ON (L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80)
L82	846	SEA FILE=HCA ABB=ON PLU=ON L81 AND L49
L83	244	SEA FILE=HCA ABB=ON PLU=ON L82 AND L51
L84	2	SEA FILE=HCA ABB=ON PLU=ON L83 AND L52
L87	37	SEA FILE=HCA ABB=ON PLU=ON L83 AND (L60 OR L61)
L88	5	SEA FILE=HCA ABB=ON PLU=ON L87 AND L57
L90	39	SEA FILE=HCA ABB=ON PLU=ON L70 OR L84 OR L88
L91	48085	SEA FILE=HCA ABB=ON PLU=ON ELECTROLUM!N?
L92	21523	SEA FILE=HCA ABB=ON PLU=ON L91 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48) OR L81)
L93	3410	SEA FILE=HCA ABB=ON PLU=ON L92 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)
L94	7	SEA FILE=HCA ABB=ON PLU=ON L93 AND L52
L96	58	SEA FILE=HCA ABB=ON PLU=ON L93 AND L57
L97	9	SEA FILE=HCA ABB=ON PLU=ON L96 AND (L60 OR L61)
L98	44	SEA FILE=HCA ABB=ON PLU=ON L94 OR L97 OR L90

=> d l98 1-44 cbib abs hitstr hitind

L98 ANSWER 1 OF 44 HCA COPYRIGHT 2005 ACS on STN
141:233117 Development of OLED with high stability and **luminance** efficiency by co-doping methods for full color displays. Kanno, Hiroshi; Hamada, Yuji; Takahashi, Hisakazu (Display Devices Department, Materials and Devices Development Center BU, Sanyo Electric Company, Ltd., Osaka, 573-8534, Japan). IEEE Journal of Selected Topics in Quantum Electronics, 10(1), 30-36 (English) 2004. CODEN: IJSQEN. ISSN: 1077-260X. Publisher: Institute of Electrical and Electronics Engineers.

AB The authors propose co-doping systems in emission layers of **red**- and **green** organic **light-emitting** diodes (OLEDs). The **luminance**-voltage, **luminous** and power efficiency-voltage characteristics, operational stability, and the energy bands of materials were measured. In **red** OLED devices, the authors propose an emitting assist (EA) dopant for better **luminance** efficiency and power efficiency with pure **red** emission and improved operational stability. The EA dopant (rubrene) did not emit itself but assisted the energy transfer from a host (Alq) to an emitting dopant (DCJTB). By doping rubrene, the **luminance** efficiency increased from 1.7 to 4.3 cd/A (from 0.6 to 1.9 lm/W) with chromaticity of (x = 0.64, yr = 0.36) unchanged. An improved lifetime was also observed In **green** OLED devices, the authors introduced hole transporting material (NPB) into an emission layer for better charge injection balance. The **green** devices with the emitting dopant (C545T) achieved the **luminance** efficiency of 8.5 cd/A compared with 6.9 **cd**/A **without** NPB. The authors studied the co-doping methods and use of this approach for active-matrix full color display. The power consumption of white emission at 100 cd/m2 was reduced by 32%. The effectiveness of these co-doping methods was demonstrated for practical applications.

IT **7429-90-5, Aluminum,** uses
RL: DEV (Device component use); USES (Uses)
(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

ST emission layer codoping OLED full color display; active matrix full color **light emitting** diode display codoping

IT **Luminescence**

Luminescence, electroluminescence
(co-doping systems in emission layers of **red**- and **green** organic **light-emitting** diodes for full color displays)

IT **Electroluminescent devices**
(**displays**, OLED; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT **Luminescent** screens
(**electroluminescent**, OLED; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT Doping
(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 2085-33-8, AlQ3
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emission layer; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 517-51-1, Rubrene
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting assist dopant; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 155306-71-1, C545T
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting dopant; co-doping systems in emission layers of **red**- and **green** organic **light-emitting** diodes for full color displays)

IT 200052-70-6, DCJTB
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(emitting layer dopant; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT **7429-90-5, Aluminum**, uses 7789-24-4, Lithium fluoride, uses 50926-11-9, ITO
RL: DEV (Device component use); USES (Uses)
(full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

IT 123847-85-8, NPB
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC

(Process); USES (Uses)
(hole transport layer; full color organic **light-emitting** displays with high stability and **luminance** efficiency containing co-dopant in emission layers)

L98 ANSWER 2 OF 44 HCA COPYRIGHT 2005 ACS on STN
140:225970 **Yellow**-emitting **phosphors** for low-energy **electron beams**, and vacuum **fluorescent** displays employing same. Oshima, Hidenori (Noritake Itron Corp., Japan; Noritake Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2004075900 A2 20040311, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-239742 20020820.

AB The **phosphors** are made of **Mn**-activated Ca In compound oxides. The **phosphors** are **Cd-free** and do not cause deterioration of **cathodes** of the **displays** since free from gas generation upon usage.

IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(activator; **yellow**-emitting **phosphors** for low-energy **electron beams** made of **Mn**-activated Ca In oxides for vacuum **fluorescent** displays)

RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IC ICM C09K011-62
ICS C09K011-08; H01J029-20; H01J031-15

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

ST **yellow phosphor manganese** activated calcium indium oxide; **electron beam phosphor manganese** activated calcium indium oxide; vacuum **fluorescent** display **yellow phosphor**

IT Optical imaging **devices**
(vacuum **fluorescent displays**; **yellow**-emitting **phosphors** for low-energy **electron beams** made of **Mn**-activated Ca In oxides for vacuum **fluorescent** displays)

IT **Phosphors**
(**yellow**-emitting; **yellow**-emitting **phosphors** for low-energy **electron beams** made of **Mn**-activated Ca In oxides for vacuum **fluorescent** displays)

IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(activator; **yellow**-emitting **phosphors** for

low-energy **electron beams** made of **Mn**
-activated Ca In oxides for vacuum **fluorescent** displays)

IT 12013-41-1P, Calcium indium oxide (cain2o4)
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(host; **yellow**-emitting **phosphors** for low-energy **electron beams** made of **Mn**
-activated Ca In oxides for vacuum **fluorescent** displays)

L98 ANSWER 3 OF 44 HCA COPYRIGHT 2005 ACS on STN
139:330018 **Electroluminescence** from Hybrid Conjugated Polymer-CdS:**Mn/ZnS** Core/Shell Nanocrystals Devices. Yang, Heesun; Holloway, Paul H. (Department of Materials Science and Engineering, University of Florida, Gainesville, FL, 32611-6400, USA). Journal of Physical Chemistry B, 107(36), 9705-9710 (English) 2003. CODEN: JPCBFK. ISSN: 1520-6106. Publisher: American Chemical Society.

AB Reverse micelle-derived CdS:**Mn/ZnS** core/shell nanocrystals were synthesized with a core crystal diameter of 2.3 nm and a 0.4 nm thick **ZnS** shell and used as an **electroluminescent** material. D.c. (d.c.) **electroluminescent** (**EL**) devices were tested having a hybrid organic/inorg. multilayer structure of ITO//PEDOT-PSS//conjugated polymer//CdS:**Mn/ZnS** nanocrystal//**Al**, where 2 different conjugated polymers (poly(N-vinylcarbazole) (PVK) and poly(p-phenylenevinylene) (PPV)) were used. The poly(3,4-ethylenedioxythiophene)/poly(styrenesulfonate) (PEDOT-PSS) layer was used for enhanced hole injection from the ITO electrode. **Orange** and **green EL** emission was observed from devices with PVK and PPV devices, resp. These data mean that electron-hole recombination is confined to the CdS:**Mn/ZnS** nanocryst. layer in PVK-based devices but occurs in the PPV layer in PPV-based devices. Compared to a PPV **EL** device **without** a **CdS:Mn/ZnS** layer, the hybrid PPV-based nanocryst. **EL** device showed large current flow and considerably enhanced **EL** emission. Probably the CdS:**Mn/ZnS** nanocrystal layer serves as an electron transport layer (ETL) in the hybrid device. These observations are consistent with the energy level diagrams of the **EL** devices.

IT **7439-96-5, Manganese**, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from hybrid conjugated polymer cadmium **sulfide/zinc sulfide** core/shell nanocrystals devices doped with)

RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IT **1314-98-3, Zinc sulfide,** properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from hybrid conjugated polymer devices with nanocrystals of **manganese**-doped cadmium sulfide core and shell of)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═Zn

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38, 76
ST **electroluminescence** hybrid conjugated polymer cadmium **zinc sulfide manganese** nanocrystal; **luminescence electro** conjugated polymer cadmium **zinc sulfide manganese** nanocrystal
IT Polymers, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(conjugated; **electroluminescence** from **manganese**-doped cadmium **sulfide/zinc sulfide** core/shell nanocrystals devices hybrid with)
IT Electric conductivity
Electron-hole recombination
(in hybrid conjugated polymer-**manganese**-doped cadmium **sulfide/zinc sulfide** core/shell nanocrystals devices)
IT Electric current-potential relationship
Electroluminescent devices
Luminescence
Luminescence, electroluminescence
Transmission electron microscopy
(of hybrid conjugated polymer-**manganese**-doped cadmium **sulfide/zinc sulfide** core/shell nanocrystals devices)
IT Micelles
(reverse; **electroluminescence** from hybrid conjugated polymer-**manganese**-doped cadmium **sulfide/zinc sulfide** core/shell nanocrystals devices derived from)
IT **7439-96-5, Manganese,** properties
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from hybrid conjugated polymer

cadmium **sulfide/zinc sulfide**
core/shell nanocrystals devices doped with)

IT **1314-98-3, Zinc sulfide,** properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from hybrid conjugated polymer devices with nanocrystals of **manganese**-doped cadmium sulfide core and shell of)

IT 1306-23-6, Cadmium sulfide, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from hybrid conjugated polymer devices with nanocrystals of **zinc sulfide** shell and core of **manganese**-doped)

IT 25067-59-8, Poly(N-vinylcarbazole) 26009-24-5, Poly(p-phenylenevinylene) 50851-57-5 126213-51-2, Poly(3,4-ethylenedioxythiophene)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**electroluminescence** from **manganese**-doped cadmium **sulfide/zinc sulfide**
core/shell nanocrystals devices hybrid with)

L98 ANSWER 4 OF 44 HCA COPYRIGHT 2005 ACS on STN
139:171383 **Cathode-ray tube** using **phosphor** with prolonged life for projector in television.
Igarashi, Takahiro; Kusunoki, Tsuneo; Ono, Katsutoshi (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003234075 A2 20030822, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-31192 20020207.

AB The **cathode-ray tube** has a **light emission** layer made of (a) blue **light-emitting** Ag- and **Al-doped** **ZnS** particles, (b) **green light-emitting** Tb-doped Y_2SiO_5 particles, and/or (c) **red light-emitting** Eu-doped Y_2O_3 with particle diameter 5-7 μm on a **fluorescent** layer. The **phosphors**, showing prolonged life, provide the TV projector with reduced **electron beam** size spots without browning of the **cathode-ray tube** walls.

IT **7429-90-5, Aluminum,** uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **cathode-ray tube** using **electroluminescent phosphor** containing)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IT **1314-98-3, Zinc sulfide,** uses

RL: TEM (Technical or engineered material use); USES (Uses)
(silver- and **aluminum**-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IC ICM H01J031-10
ICS C09K011-08; C09K011-56; C09K011-78; C09K011-79; H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST **cathode ray tube fluorescent** layer **phosphor**; long life **phosphor** **cathode ray tube**; television projector **cathode ray tube**; silver **aluminum doped zinc sulfide** **phosphor**; terbium doped yttrium silicon oxide **phosphor**; europium doped yttrium oxide **phosphor**
IT **Cathode ray tubes**
Projection apparatus
Television
(**cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)
IT **Phosphors**
(**electroluminescent**; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)
IT **7429-90-5, Aluminum**, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-53-1, Europium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **cathode-ray tube** using **electroluminescent phosphor** containing)
IT 1314-36-9, Yttrium oxide (Y2O3), uses
RL: TEM (Technical or engineered material use); USES (Uses)
(europium-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)
IT **1314-98-3, Zinc sulfide**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(silver- and **aluminum**-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)
IT 12027-88-2, Silicon yttrium oxide (SiY2O5)
RL: TEM (Technical or engineered material use); USES (Uses)
(terbium-doped; **cathode-ray tube** using **electroluminescent phosphor** with prolonged life for projector in television)

L98 ANSWER 5 OF 44 HCA COPYRIGHT 2005 ACS on STN
138:129134 El panel using phosphor films. Yano, Yoshihiko; Nagano, Katsuto (TDK Corporation, Japan). Eur. Pat. Appl. EP 1279718 A2 20030129, 11 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-308427 20011002. PRIORITY: JP 2001-228272 20010727.

AB An EL panel comprising EL phosphor films of three types which emit **red**, **green** and blue light, resp., containing europium as a luminescence center is described wherein the EL phosphor films of three types have the compositional formula AxByOzSw:R wherein A = Mg, Ca, Sr, Ba or rare earth elements, B = **Al**, Ga or In, x = 0-5, y = 0-15, z = 0-30, w = 0-30, and R = the luminescence center containing europium.

IT **1314-98-3, Zinc sulfide (ZnS)**, uses
RL: DEV (Device component use); USES (Uses)
(phosphor; **electroluminescent** panel using three color phosphor films)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IC ICM C09K011-84
ICS H05B033-18; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76

ST **electroluminescent** panel phosphor film

IT **Electroluminescent devices**
(**displays**; **electroluminescent** panel using three color phosphor films)

IT Luminescent screens
(**electroluminescent**; **electroluminescent** panel using three color phosphor films)

IT 1302-81-4, **Aluminum** sulfide (Al2S3) 12024-22-5, Gallium sulfide (Ga2S3) 20548-54-3, Calcium sulfide (CaS)
RL: DEV (Device component use); USES (Uses)
(**electron beam source**; **electroluminescent** panel using three color phosphor films)

IT **1314-98-3, Zinc sulfide (ZnS)**, uses 1344-28-1, Alumina, uses 12004-37-4, **Aluminum** strontium oxide (Al2SrO4) 12592-70-0, Gallium strontium sulfide (Ga2SrS4) 51403-77-1, **Aluminum** barium sulfide (Al2BaS4)
RL: DEV (Device component use); USES (Uses)
(phosphor; **electroluminescent** panel using three color phosphor films)

IT 7440-53-1, Europium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(phosphor; **electroluminescent** panel using three color phosphor films)
IT 12047-27-7, Barium titanate (BaTiO3), uses
RL: DEV (Device component use); USES (Uses)
(substrate, buffer layer; **electroluminescent** panel using three color phosphor films)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(substrate; **electroluminescent** panel using three color phosphor films)

L98 ANSWER 6 OF 44 HCA COPYRIGHT 2005 ACS on STN
137:207921 YAGG: Tb, Gd **green** phosphor used for FED. Li, Lan; Liang, Cui-guo; Xie, Bao-sen; Zhao, Shou-zhen; Du, Zhong; Zou, Kaishun; Xiong, Guang-nan (Institute of Information, Hebei University of Industry, Tianjin, 300130, Peop. Rep. China). Faguang Xuebao, 23(3), 252-254 (Chinese) 2002. CODEN: FAXUEW. ISSN: 1000-7032. Publisher: Kexue Chubanshe.
AB Recent development of field emission **display** (FED) **device** require searching for some new kind of phosphor material which can possess low excitation potential, chemical and thermal stability, long service life at high current densities. YAGG:Tb phosphor was used as an **green** phosphor for PTV application. It shows **green** emission with high brightness and good chromaticity under high energy **electron beam** excitation. The co-activated lanthanon such as Ce, Dy, Gd was study sep. and exhibited good brightness. The authors synthesize and carry on surface perfect the phosphor and try this phosphor to be used in low voltage range such as 0-3000 V which is suitable for FED. The YAGG:Tb, Gd powder was synthesized by heating highly pure powders of Tb2O3, Ga2O3, Gd2O3, Al2O3, and other flux at 1400-1500° in the air. After that, acid and pure H2O was used to clean the phosphor. At last, polymer binder was used to film the phosphor. The emission peak of YAGG:Tb, Gd excited by electron ray was in 544 nm similar with YAGG:Tb. Its relative luminescent brightness change with voltage of electron ray was show in Fig. 1. The properties of traditional **green** phosphor ZnO:Zn was used as standard The relative brightness of YAGG:Tb is higher than that of ZnO:Zn at 0-3000 V excited voltage and the dead voltage was similar with ZnO:Zn. It has not saturation situation as ZnO:Zn. Fig. 2 shows the change curve of relative brightness of YAGG:Tb, Gd and ZnO:Zn with excited c.d. YAGG:Tb, Gd also shows the good behavior. The YAGG:Tb, Gd was synthesized and improved with suitable method. After compared with ZnO:Zn, it will be more effective at strong excited condition.
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **aluminum** gallium yttrium oxide terbium gadolinium phosphor
IT Field emission displays
Luminescence, **electroluminescence**
Phosphors
(YAGG: Tb, Gd **green** phosphor used for FED)
IT 110621-14-2, **Aluminum** gallium yttrium oxide ((**Al**

,Ga)5Y3O12)
RL: DEV (Device component use); USES (Uses)
(YAGG: Tb, Gd **green** phosphor used for FED)
IT 7440-27-9, Terbium, uses 7440-54-2, Gadolinium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(YAGG: Tb, Gd **green** phosphor used for FED)

L98 ANSWER 7 OF 44 HCA COPYRIGHT 2005 ACS on STN
136:285971 Thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga
film **phosphors**. Kryshtab, T. G.; Khomchenko, V. S.; Papusha, V. P.; Mazin, M. O.; Tzyrkunov, Yu. A. (Department of Material Sciences, ESFM-Institute Polytechnic National, U.P.A.L.M., Mexico City, 07738, Mex.). Thin Solid Films, 403-404, 76-80 (English) 2002. CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science S.A..
AB A new technique for electro- and cathodoluminescent screen fabrication with the application of a new method of **doping** **ZnS:Cu** and ZnO:**Cu** thin film **phosphors** is proposed. Thin films of **ZnS:Cu** were grown by **electron-beam** evaporation (EBE) from a **ZnS:Cu** target on substrates heated to 150-200°, and the **Cu** concentration in the target was varied from 0.06 to 0.25 weight %. BaTiO3 and sapphire single crystal substrates were used. The film thickness varied from 0.6 to 9 μm. Parameters of **ZnS:Cu** films grown by EBE were modified using non-vacuum annealing at 700-1000° in S2-rich or O2-rich atmospheric both with and without Ga co-doping. The measurement of **electroluminescent** (**EL**) and cathodoluminescent (CL) parameters, as well as XRD techniques and atomic force microscopy (AFM) were used for this research. The **EL ZnS:Cu**,Ga blue color emission film with a **luminance** of 30 cd/m2 and **green** (**yellow**) color emission film with a **luminance** of 800 cd/m2 were obtained. Devices with such films have a threshold voltage of 10 V The CL **luminance** was 200 cd/m2 for **ZnS:Cu**,Ga and 1100 cd/m2 for ZnO:**Cu**,Ga films at 300 K and 3700 cd/m2 for ZnO:**Cu**,Ga films at 77 K The films show a deeper **green** color than com. **phosphors**. Clarification that Ga co-doping affects the **luminance**, since Ga influences on recrystn. process, was carried out.
IT **7440-50-8**, **Copper**, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3, Zinc sulfide**, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **copper** gallium doped **zinc** oxide **sulfide** film **phosphor**
IT **Electroluminescent devices**
(**displays**; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT Annealing
(effect of; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT **Luminescent** screens
(**electroluminescent**; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT Cathodoluminescence
Cathodoluminescent screens
Electron beam evaporation
Luminescence, electroluminescence
Phosphors
Surface structure
X-ray diffraction
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT 7782-44-7, Oxygen, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(annealing in atmospheric rich in; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT 1344-28-1, Alumina, uses
RL: NUU (Other use, unclassified); USES (Uses)
(sapphire substrate; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT 12047-27-7, Barium titanate, uses
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT **7440-50-8, Copper**, properties 7440-55-3, Gallium, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)
IT 7704-34-9, Sulfur, occurrence

RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 1314-13-2, Zinc oxide, properties **1314-98-3, Zinc sulfide**, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

L98 ANSWER 8 OF 44 HCA COPYRIGHT 2005 ACS on STN
136:240587 Synthesis and study of bio-coordination compounds of Zn(II), Co(II), **Cu**(II) and Cd(II). Shvelasvili, A.; Beshkenadze, I.; Tskitishvili, M.; Zorzholiani, N.; Zedelashvili, E.; Tsutsunava, T.; Svanidze, O.; Tavberidze, M.; Tsiskarishvili, P.; Sakvarelidze, T. (Georgia). Izvestiya Akademii Nauk Gruzii, Seriya Khimicheskaya, 27(1-2), 19-24 (Georgian) 2001. CODEN: IANKEJ. Publisher: Metsniereba.

AB The methods of synthesis of new coordination compds. such as: ML2·nH2O (I), M(HL)xSO4·nH2O (II), M(HL)x(HQ)ySO4·nH2O (III) (M = Zn, Co, **Cu**, Cd; HL = methionine, HQ = glutamic acid, x = 1, 2, 3; yr = 1, 2) were elaborated. I were obtained in aqueous solns. at pH = 8-9. II and III were obtained in aqueous solution at pH = 2.3. The complexes were characterized by IR spectra. The introduction of these transition metal methionine complexes as biostimulators into fodder **led** to decrease of poultry loss, increase in live mass, **reduction** of fodder expenditures.

IT **7440-50-8DP, Copper**, methionine complexes with/without glutamic acid
RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 5

IT Transition metal complexes
RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid, methionine with/without glutamic acid; preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

IT Amino acids, preparation
RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(transition metal complexes, methionine with/without glutamic

acid; preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

IT 56-86-0DP, L-Glutamic acid, transition metal methionine complexes 63-68-3DP, L-Methionine, transition metal complexes with/without glutamic acid 7440-43-9DP, **Cadmium**, methionine complexes with/**without** glutamic acid 7440-48-4DP, Cobalt, methionine complexes with/without glutamic acid **7440-50-8DP**, **Copper**, methionine complexes with/without glutamic acid 7440-66-6DP, Zinc, methionine complexes with/without glutamic acid 13985-65-4P 19224-84-1P 40816-51-1P
RL: AGR (Agricultural use); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of iron/magnesium/**manganese** glutamic acid/methionine complexes as plant growth stimulators for poultry fodder)

L98 ANSWER 9 OF 44 HCA COPYRIGHT 2005 ACS on STN
134:325850 Impact of heavy metal residue on soil microbiota and growth of eucalyptus. Melloni, Rogerio; Abrahao, Rafaela Simao; De Souza Moreira, Fatima Maria; Furtini Neto, Antonio Eduardo (Dep. Cienc. Solo, Univ. Fed. Lavras, Lavras, 37200-000, Brazil). Revista Arvore, 24(3), 309-315 (Portuguese) 2000. CODEN: RARVDY. ISSN: 0100-6762. Publisher: Sociedade de Investigacoes Florestais.

AB The effect of aciary oven powder application on soil microbiota and growth of Eucalyptus grandis was studied under **greenhouse** conditions in a completely randomized design and a 2 + 4 factorial, using two types of soil (**Red-Yellow** Latosol LV and Dark-**Red** Latosol LE) and 4 levels of heavy metal residue (0; 0.75; 1.50 and 3.00 g per pot with 1.5 dm-3 of soil, corresponding to 0, 1, 2, and 4 t/ha), with 4 replicates. The soils were limed and fertilized before addition of the residue and transplant of the eucalypt seedlings. The experiment was conducted with 3 plants per pot and received 5 N fertilization of 18 mg N/kg, biweekly after transplanting. Ninety days after transplanting, the plants and soil samples of all the treatments were collected to determine the shoot and root dry matter, to make a semi-quant. evaluation of associative diazotrophs on soils, and to evaluate microbial activity, microbial biomass C and shoot concns. of heavy metals (Cd and Pb) and micronutrients (**Cu**, Fe, **Mn** and Zn). Thus, the impacts of the heavy metal residue varied according to the aciary oven powder levels used and the soil type. Increasing residue levels **led** to an increase in shoot concns. of **Cu**, Fe, **Mn**, Zn, **Cd** and Pb, **without** reaching values considered toxic to the culture at a calculated level of 2.6 t/ha for LE and 2.2 t/ha for the LV soil. At these levels, there was a decrease in microbial activity, an increase in C-microbial biomass in LE and no effect on the diazotrophs studied in both soils and on the C-microbial biomass in LV.

IT **7439-96-5**, **Manganese**, biological studies
7440-50-8, **Copper**, biological studies
RL: BAC (Biological activity or effector, except adverse); BSU

(Biological study, unclassified); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)
(effect of heavy metals on soil microbiota and growth of eucalyptus)
RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 19-9 (Fertilizers, Soils, and Plant Nutrition)
IT 7439-89-6, Iron, biological studies 7439-92-1, Lead, biological studies **7439-96-5, Manganese**, biological studies 7440-43-9, Cadmium, biological studies **7440-50-8, Copper**, biological studies 7440-66-6, Zinc, biological studies
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); POL (Pollutant); BIOL (Biological study); OCCU (Occurrence)
(effect of heavy metals on soil microbiota and growth of eucalyptus)

L98 ANSWER 10 OF 44 HCA COPYRIGHT 2005 ACS on STN
134:232816 Effect of toxic metals on some medical plants. Masarovicova, E.; Kral'ova, K.; Sersen, F.; Bumbalova, A.; Lux, A. (Department of Plant Physiology, Faculty of Natural Sciences, Comenius University, Bratislava, SK-84215, Slovakia). Mengen- und Spurenelemente, Arbeitstagung, 19th, Jena, Germany, Dec. 3-4, 1999, 189-196. Editor(s): Anke, Manfred. Verlag Harald Schubert: Leipzig, Germany. (English) 1999. CODEN: 69ATUC.
AB The effect of toxic metal Cd on growth, plant biomass (root and shoot), and root dark respiration rate of Hypericum perforatum was studied. The plants treated with Cd respired faster than control plants. Studied species could accumulate larger amount of **Cd without reduction** of the growth and biomass production Cadmium concentration in the root was 7-times higher than in the stem or leaves. The oxygen evolution rate (OER) in H. perforatum and Karwinskia humboldtiana chloroplasts was inhibited by the studied metals **Cu**, Hg and Ni. The toxicity of the metals for the both investigated medicinal plants decreased in following order **Cu** > Hg > Ni > Cd and the toxicity of **copper** was approx. 2.8 - 3.7 times higher than that of mercury and 99 - 205 times higher than that of nickel. In the presence of the metals studied, the intensity of the **fluorescence** emission band at 686 nm belonging to the chlorophyll a-protein complexes present mainly in photosystem 2 (PS 2) showed a linear decrease with increasing metal concentration, suggesting PS 2 as the site of action of

the investigated metals. Using EPR spectroscopy the site of Cd action in leaves of H. perforatum plant (grown in hydroponic solution containing 12 μmol dm-3 Cd; pH = 5.5) was determined It was found that Cd interacted with the intermediates Z+/D+ (i.e. with tyrosine radicals which are located in 161st position in D1 and D2 proteins situated on the donor side of PS 2), however the interaction with the intermediate Z+ was more intensive. The study of the metal accumulation in dried samples of H. perforatum chloroplasts showed that the amount of the accumulated metal strongly increases with increasing metal concentration applied at metal-treating. It was found that the binding of Hg to H. perforatum chloroplasts is the most pronounced, and it is approx. 3-4 times higher than the binding of **Cu** and Cd.

IT **7440-50-8, Copper**, biological studies
RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
(toxicity of heavy metals on medical plants)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 4-3 (Toxicology)
Section cross-reference(s): 11

IT 7439-97-6, Mercury, biological studies 7440-02-0, Nickel, biological studies 7440-43-9, Cadmium, biological studies **7440-50-8, Copper**, biological studies
RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
(toxicity of heavy metals on medical plants)

L98 ANSWER 11 OF 44 HCA COPYRIGHT 2005 ACS on STN

134:71023 Effect of **Aluminum** Competition on Lead and Cadmium Binding to Humic Acids at Variable Ionic Strength. Pinheiro, J. P.; Mota, A. M.; Benedetti, M. F. (CMQA UCEH-A.D. Quimica, Universidade do Algarve Campus de Gambelas, Faro, 8000, Port.). Environmental Science and Technology, 34(24), 5137-5143 (English) 2000. CODEN: ESTHAG. ISSN: 0013-936X. Publisher: American Chemical Society.

AB Complexation of Al3+ by NOM will change the speciation of **Al** and influence its toxicity. Competitive binding data between **Al** and metal ions to humic acids are needed to understand changes in speciation and mobility. One also needs to investigate the effect of changes in electrolyte concentration on the binding of **Al**, Pb and Cd to humic acid. Competition expts. were performed at various pH and electrolyte concns. using Cd and Pb ion selective electrodes to measure free metal ion concns. The effect of **aluminum** on the lead binding was important; it could reduce the amount of lead bound by a factor of 2 to 3. In the absence of **Al**, an increase of ionic strength also **led** to a **reduction** of Pb bound. For cadmium, similar results were obtained. The NICA-Donnan model was used to describe the **Al** and Pb binding to humic acids and to predict Pb-**Al** as well

as **Cd-Al** competition **without** parameter adjustment. With NICA-Donnan model, the authors calculated the speciation of the metal ions in the system and quantified the contribution of specific binding and electrostatic binding as pH, electrolyte and metal ion concns. changed during the expts. In a natural environment, **Al** competition will have an effect on Pb toxicity and on Cd transport.

IT **7429-90-5, Aluminum,** reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(lead and cadmium binding to humic acids response to **aluminum** competition at variable ionic strength)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 19-10 (Fertilizers, Soils, and Plant Nutrition)
Section cross-reference(s): 4, 61

ST **aluminum** competition cadmium lead binding humic acid

IT Complexation
Ionic strength
(**aluminum** competition effect on lead and cadmium binding to humic acids at variable ionic strength)

IT Humic acids
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(**aluminum** competition effect on lead and cadmium binding to humic acids at variable ionic strength)

IT Metal speciation
(**aluminum** competition effect on lead and cadmium binding to humic acids at variable ionic strength in relation to)

IT 7439-92-1, Lead, reactions 7440-43-9, Cadmium, reactions
RL: PEP (Physical, engineering or chemical process); POL (Pollutant); RCT (Reactant); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
(**aluminum** competition effect on lead and cadmium binding to humic acids at variable ionic strength)

IT **7429-90-5, Aluminum,** reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(lead and cadmium binding to humic acids response to **aluminum** competition at variable ionic strength)

L98 ANSWER 12 OF 44 HCA COPYRIGHT 2005 ACS on STN
130:58898 Environmentally safe **yellow** bug light. Labant, Cynthia J. (Osram-Sylvania Inc., USA). PCT Int. Appl. WO 9856031 A1 19981210, 13 pp. DESIGNATED STATES: W: CN, DE, HU. (English). CODEN: PIXXD2. APPLICATION: WO 1998-IB1224 19980603. PRIORITY: US 1997-48449 19970603.

AB **Yellow** bug lamps are described which have a **cadmium-free** coating which comprises sulfate precipitated

silica, **aluminum** silicate pigment, zirconium **praseodymium yellow** zircon, and nickel titanium **yellow** rutile. Preferably the **light emitted** has color coordinates of x = 0.5341 to 0.5406 and y = 0.4400 to 0.4378.

IT **7440-10-0, Praseodymium**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**yellow** zircon pigment containing; **yellow** bug lights with **cadmium-free** coatings)

RN 7440-10-0 HCA
CN Praseodymium (8CI, 9CI) (CA INDEX NAME)

Pr

IC ICM H01K001-32
ICS H01J061-40
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 5
ST **cadmium free** coating **yellow** bug light
IT Optical filters
(coatings; **yellow** bug lights with **cadmium-free** coatings)
IT Electric lamps
(incandescent, bug; **yellow** bug lights with **cadmium-free** coatings)
IT Pigments, nonbiological
(**yellow** bug lights with **cadmium-free** coatings)
IT 1335-30-4, **Aluminum** silicate 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(coatings containing; **yellow** bug lights with **cadmium-free** coatings)
IT 7440-62-2, Vanadium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(pigment containing; **yellow** bug lights with **cadmium-free** coatings)
IT 10101-52-7, Zirconium silicate
RL: DEV (Device component use); USES (Uses)
(**praseodymium**-containing; **yellow** bug lights with **cadmium-free** coatings)
IT 54576-53-3, Antimony nickel titanium oxide
RL: DEV (Device component use); USES (Uses)
(vanadium-doped, pigment containing; **yellow** bug lights with **cadmium-free** coatings)
IT **7440-10-0, Praseodymium**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**yellow** zircon pigment containing; **yellow** bug lights with **cadmium-free** coatings)

L98 ANSWER 13 OF 44 HCA COPYRIGHT 2005 ACS on STN
129:252029 Interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol. Isarov, Alex V.; Chrysochoos, John (Department of Chemistry, The University of Toledo, Toledo, OH, 43606, USA). Proceedings - Indian Academy of Sciences, Chemical Sciences, 110(3), 277-295 (English) 1998. CODEN: PIAADM. ISSN: 0253-4134. Publisher: Indian Academy of Sciences.

AB The interactions of free and complexed **Cu** ions (**Cu**(ClO4)2, **Cu**(acac)2, and CuTPP) with the surface of nonstoichiometric CdS nanoparticles were monitored by EPR spectroscopy, recombination **luminescence** quenching and UV/visible absorption spectroscopy. Formation of a surface S-**Cu** bond takes place both in the case of **Cu**(ClO4)2 (free Cu2+ ions) and **Cu**(acac)2. This process is accompanied by thermal (dark) **reduction** of Cu2+, formation of a new energy level in the semiconductor bandgap and quenching of the original recombination **luminescence** of the nanoparticles. The quenching data obey a static interaction model, which confirms binding of **Cu** ions onto the surface of CdS nanoparticles. **Cu**(acac)2 mols. can interact with Cd2+ ions on the surface of CdS, leading to a less effective quenching of the recombination **luminescence** of CdS, compared to that by free **Cu** ions. In contrast to the behavior of **Cu**(ClO4)2 and **Cu**(acac)2, **Cu**(II) tetraphenylporphyrin does not interact directly with the surface of CdS nanoparticles, leading to a very negligible quenching of the recombination **luminescence** of CdS(e1r-/htr+) nanoparticles.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 66, 76, 77

ST interfacial electron transfer cadmium sulfide nanoparticle; recombination **luminescence** quenching cadmium sulfide nanoparticle; UV visible cadmium sulfide nanoparticle; ESR cadmium sulfide nanoparticle; **redn copper** cadmium sulfide nanoparticle; band gap cadmium sulfide nanoparticle; acetylacetonato **copper** bond cadmium sulfide nanoparticle; tetraphenylporphyrinato **copper** bond cadmium sulfide nanoparticle; **copper** complex bond cadmium sulfide nanoparticle

IT Interface
(electron transfer; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT Bond formation
ESR (electron spin resonance)
Nanoparticles
Reduction
UV and visible spectra
(interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and

complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT Electron transfer
(interfacial; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT Band gap
(optical; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT Radiative recombination
(quenching; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT **Luminescence** quenching
(recombination; interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

IT 1306-23-6, Cadmium sulfide, properties 13395-16-9, Bis(acetylacetonato)**copper** 13770-18-8, **Copper** bis(perchlorate) 14172-91-9, (meso-Tetraphenylporphinato) **copper** 18496-25-8, Sulfide 22537-48-0, Cadmium 2+, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(interfacial electron transfer from nonstoichiometric **cadmium** sulfide nanoparticles to **free** and complexed **copper**(II) ions in 2-propanol with recombination **luminescence** quenching)

L98 ANSWER 14 OF 44 HCA COPYRIGHT 2005 ACS on STN
129:101424 Effects of insulating layers on the performance of organic **electroluminescent** devices. Jabbour, Ghassan E.; Schlaf, Rudy; Armstrong, Neal R.; Kippelen, Bernard; Peyghambarian, Nasser (Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3281(Polymer Photonic Devices), 182-190 (English) 1998. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB In this paper, we demonstrate the enhancement in the performance of organic **electroluminescent** devices upon the insertion of an insulating layer or layers of LiF in the device structure. Highly efficient and bright organic **light-emitting** devices were fabricated with this approach. External quantum efficiencies approaching 3% and light output exceeding 45,000 cd/m2 were achieved for **green light-emitting** devices with **Al** cathode. This technique can be extended to fabricate efficient blue and sharp **red light-emitting** devices. In this respect, using **Al** as

the electron injecting electrode, blue **light-emitting** devices with external quantum efficiency of 1.4% and light output >4,000 **cd**/m2 were achieved **without** the use of dopants. For sharp-**red** **light-emitting** devices, record efficiency and light output were obtained when LiF was used. Devices without the LiF layer showed light output levels <5 cd/m2, whereas, with the insertion of LiF before the cathode, the external quantum efficiency exceeded 1% and light output was >320 cd/m2. All of these devices had lower operational voltage than similar devices without the LiF layer. Preliminary UPS-XPS results revealed a sharp decrease in the work function of **aluminum** upon the deposition of sub-monolayer of LiF. Although, the use of the LiF layer on the indium-tin-oxide anode showed some enhancement in device performance, the contribution to device performance is lower than the case with the same insulator deposited at the cathode side, indicating that the cathode is more problematic than the hole injecting indium-tin-oxide electrode.

IT **7429-90-5, Aluminum**, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices and effect on work function)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST lithium fluoride insulator org **electroluminescent** device

IT Anodes
Cathodes
Electric current-potential relationship
Electroluminescent devices
(lithium fluoride insulating layers for high-performance organic **electroluminescent** devices)

IT Work function
(of **aluminum** cathode in organic **electroluminescent** device and **reduction** due to lithium fluoride insulating layer)

IT **7429-90-5, Aluminum**, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices and effect on work function)

IT 7439-95-4, Magnesium, uses
RL: DEV (Device component use); USES (Uses)
(cathode; lithium fluoride insulating layers for high-performance organic **electroluminescent** devices using)

IT 7789-24-4, Lithium fluoride (LiF), properties

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(insulating layers for high-performance organic **electroluminescent** devices)
IT 50926-11-9, ITO
RL: DEV (Device component use); USES (Uses)
(lithium fluoride insulating layers for high-performance organic **electroluminescent** devices using)
IT 1047-16-1, Quinacridone 2085-33-8, Tris(8-quinolinolato) **aluminum** 15082-28-7 17904-86-8 65181-78-4, TPD 142289-08-5
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium fluoride insulating layers for high-performance organic **electroluminescent** devices using)

L98 ANSWER 15 OF 44 HCA COPYRIGHT 2005 ACS on STN
128:186027 Transient **electroluminescence** under short and strong voltage pulses. Chayet, Haim; Pogreb, Roman; Davidov, Dan (Racah Institute Physics, Hebrew University Jerusalem, 91904, Israel). Proceedings of SPIE-The International Society for Optical Engineering, 3148(Organic Light-Emitting Materials and Devices), 34-44 (English) 1997. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.
AB We present high voltage pulsed **electroluminescence** (**EL**) measurements on **light-emitting** diodes (**LED**) based on thin films of poly(p-phenylenevinylene)(PPV) sandwiched between ITO and **aluminum** electrodes. We observe two regimes in the **LED** operation depending on the driving pulsed c.d. At low current densities, below 50 A/cm2, the pulsed **EL** follows its d.c. characteristics with **yellow-green** emission. Above some threshold c.d. we observe addnl. UV-violet emission (centered at 390 nm, ≈3.17 eV); the amplitude of the pulsed UV **EL** increases exponentially with the applied voltage. When the amplitude of the voltage pulses is around 300 V, the current signal exhibits a sharp current peak followed by a dramatic increase in UV **EL** intensity but only moderate increase of the **green** emission. We propose a possible explanation for the appearance of the UV emission upon application of strong elec. pulses. It is due, we believe, to "hot" carriers in strong fields which partially inhibit the formation fo singlet excitons and enhance the probability for direct inter-band radiative transitions. We show that our very simple device can be operated at c.d. as high as 140 A/cm2 and achieve a peak brightness of 105 **cd**/m2 **without** appreciable degradation
IT **7429-90-5, Aluminum,** uses
RL: DEV (Device component use); USES (Uses)
(transient **electroluminescence** under short and strong voltage pulses)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
ST transient **electroluminescence LED** polyphenylenevinylene
IT **Electroluminescent** devices
Exciton
(transient **electroluminescence** under short and strong voltage pulses)
IT Poly(arylenealkenylenes)
RL: DEV (Device component use); USES (Uses)
(transient **electroluminescence** under short and strong voltage pulses)
IT **Luminescence, electroluminescence**
(transient; transient **electroluminescence** under short and strong voltage pulses)
IT **7429-90-5, Aluminum**, uses 26009-24-5, Poly(p-phenylenevinylene) 50926-11-9, Indium tin oxide
RL: DEV (Device component use); USES (Uses)
(transient **electroluminescence** under short and strong voltage pulses)

L98 ANSWER 16 OF 44 HCA COPYRIGHT 2005 ACS on STN
127:180007 Manufacture of metal-filled ceramic material, its electrode, and **display device** using the same. Kakuno, Yoshinori; Yamazaki, Fumio; Inoue, Isamu (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09208332 A2 19970812 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-13416 19960130.
AB A ceramic body has, on both sides, holes which do not pierce the body and holes which pierce the body; these non-piercing holes are filled with metal chips. The ceramic is manufactured by making the holes on **greens**, inserting a metal having m.p. higher than the sintering temperature of the **green** (Ts) and thermal expansion coefficient smaller than the ceramic, and firing. The **green** sheets having holes may be laminated. The electrode is obtained by laminating 2 pieces of the ceramic body soldered with an electrode on 1 side and irradiating with a beam to solder the filled metal and the electrode. The **display device** has an **electron source**, the electrode, and an **electroluminescent** means.
IC ICM C04B035-74
ICS B23K026-00; H01J009-14
CC 57-2 (Ceramics)
Section cross-reference(s): 55, 56, 74
ST metal filled ceramic electrode **display device**; molybdenum filled alumina ceramic electrode display
IT Ceramics
Electrodes
Electrooptical imaging devices
(manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 160375-03-1, **Aluminum** magnesium silicon oxide
RL: DEV (Device component use); USES (Uses)
(ceramics; manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 39398-26-0, Chromium 6, iron 52, nickel 42
RL: DEV (Device component use); USES (Uses)
(electrode; manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

IT 7439-98-7, Molybdenum, uses
RL: DEV (Device component use); USES (Uses)
(manufacture of metal-filled ceramic material, its electrode, and **display device** using the same)

L98 ANSWER 17 OF 44 HCA COPYRIGHT 2005 ACS on STN
127:154418 Manufacture of **green**-emitting **phosphor** for excitation by low-speed **electron beam**.
Oshima, Hidenori (Noritake Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09194834 A2 19970729 Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-6397 19960118.

AB The manufacturing method involves a process of dispersing a **Mn** compound activator into ZnO·Ga2O3 in a reducing atmospheric at 800-1000°. The obtained **phosphor** may be annealed in an inactive atmospheric at 650-950° after the above process. The **phosphor** is useful for **fluorescent** display tubes.
The **phosphor** shows high **luminance** at its initial emitting.

IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) · (CA INDEX NAME)

Mn

IT **12064-18-5P, Gallium zinc oxide** (Ga2ZnO4)
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

RN 12064-18-5 HCA
CN Gallium zinc oxide (Ga2ZnO4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	4	17778-80-2
Zn	1	7440-66-6
Ga	2	7440-55-3

IC ICM C09K011-62
ICS C09K011-08
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **zinc gallium oxide manganese** activator **phosphor**; thermal **redn** zinc gallium oxide **phosphor**; **green** emitting zinc gallium oxide **phosphor**
IT **Cathode ray tubes**
Phosphors
(**doping** of **manganese** into **gallium** **zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)
IT Reduction
(thermal; **doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)
IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**doping** of **manganese** into **gallium** **zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)
IT **12064-18-5P, Gallium zinc oxide** (Ga2ZnO4)
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**doping** of **manganese** into **gallium** **zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)
IT 7785-87-7, **Manganese** sulfate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**doping** of **manganese** into **gallium** **zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

L98 ANSWER 18 OF 44 HCA COPYRIGHT 2005 ACS on STN
127:150941 FT-PL analysis of CIGS/CdS/ZnO interfaces. Webb, John D.; Keyes, Brian M.; Ramanathan, Kannan; Dippo, Patricia; Niles, David W.; Noufi, Rommel (National Renewable Energy Laboratory, Golden, CO, 80401-3393, USA). AIP Conference Proceedings, 394(NREL/SNL Photovoltaics Program Review, 1996), 573-578 (English) 1997. CODEN: APCPCS. ISSN: 0094-243X. Publisher: AIP Press.
AB High-quality **copper** indium gallium diselenide (CIGS) films were subjected to a variety of surface treatments, including deposition of CdS and/or ZnO junctions or buffer layers. The resulting devices were analyzed at 87 K using Fourier transform

photoluminescence (FT-PL) spectroscopy as part of a battery of anal. procedures, including surface anal., ellipsometry, and I-V measurements, designed to elucidate the influences of the several interfaces on device performance. Our FT-PL system was upgraded with a miniature Joule-Thomson cryostat and a helium-neon laser excitation source to enable collection of highly-resolved, continuous PL spectra from 950-1750 nm. The PL intensity enhancements measured with the upgraded FT-PL system for devices fabricated using chemical bath deposition (CBD) of **CdS**, with or **without** a ZnO electrode, are much greater than for devices incorporating phys. vapor deposited (PVD) CdS or ZnO/CIGS interfaces. Exposure of the CIGS films to components of the CBD solution alone, **without** deposition of **CdS**, also increases PL intensity, implying a **reduction** in the rate of non-radiative recombination in the films. Application of CBD CdS or a CBD background solution to the CIGS shifted its PL spectrum to shorter wavelengths, while application of PVD CdS or ZnO to the CIGS broadened its PL spectrum at longer wavelengths.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST **copper** indium gallium diselenide solar cell; surface treatment solar cell junction buffer; cadmium sulfide deposition junction buffer layer; zinc oxide deposition junction buffer layer

IT Electron-hole recombination
Solar cells
(Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT **Luminescence** spectroscopy
(Fourier transform; Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT 1306-24-7, Cadmium selenide (CdSe), uses 1314-13-2, Zinc oxide, uses
RL: DEV (Device component use); USES (Uses)
(Fourier transform photoluminescence (FT-PL) spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

IT 111419-77-3, **Copper** gallium indium selenide cugainse2
RL: DEV (Device component use); USES (Uses)
(Fourier transform photoluminescence spectroscopy anal. of **copper** indium gallium diselenide/CdS/ZnO interfaces)

L98 ANSWER 19 OF 44 HCA COPYRIGHT 2005 ACS on STN
124:40751 **Electroluminescent** properties of SrSe:Ce/**ZnS**:**Mn** multilayered thin films with white light emission.
Nakanishi, Yoichiro; Takahashi, Masahiro; Hatanaka, Yoshinori (Elec. Eng. Coll., Shizuoka Univ., Japan). Shizuoka Daigaku Denshi Kogaku Kenkyusho Kenkyu Hokoku, 30(1), 47-54 (English) 1995. CODEN: SDDHDM. ISSN: 0286-3383. Publisher: Shizuoka Daigaku Denshi Kogaku Kenkyusho.

AB White-light-emitting SrSe:Ce/**ZnS**:**Mn** multilayered thin-film **electroluminescent** (EL) devices, in which SrSe:Ce shows blue emission with good chromaticity, were prepared in view of the development of full color EL display by using R, G and B

color filters. The SrSe:Ce and **ZnS:Mn** films were prepared by multi-**source** deposition and **electron beam** evaporation techniques, resp. Luminance of white EL of about 280 cd/M2 was obtained by annealing the films at 400° for 1 h after the deposition of both SrSe:Ce and **ZnS:Mn** films. **Red** (R), **green** (G), and blue (B) emissions were obtained by filtering through R, G and B color filters. The device showed **red** and **green** emissions with nearly the same chromaticity as those of a **CRT**. Even though the chromaticity of blue emission was closer to CIE color coordinate of the standard **CRT** than that of SrSe:Ce thin-film EL device, the authors suggest that it need further improvement.

IT **7439-96-5, Manganese,** properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(activator; **electroluminescent** properties of multilayered thin films with white light emission)

RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IT **1314-98-3, Zinc sulfide,** properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electroluminescent** properties of multilayered thin films with white light emission)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

ST display white emitting **electroluminescent** device

IT **Electroluminescent** devices
Luminescence, electro-
(**electroluminescent** properties of multilayered thin films with white light emission)

IT **7439-96-5, Manganese,** properties 7440-45-1, Cerium, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(activator; **electroluminescent** properties of multilayered thin films with white light emission)

IT **1314-98-3, Zinc sulfide,** properties
1315-07-7, Strontium selenide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electroluminescent** properties of multilayered thin films with white light emission)

L98 ANSWER 20 OF 44 HCA COPYRIGHT 2005 ACS on STN
121:94937 Emission color tuning of **green** emitting **ZnS** -based **CRT phosphors**. Bredol, M.; Merikhi, J.; Koehler, I.; Bechtel, H.; Czarnojan, W. (Philips Forschungslaboratorien/Aachen, Aachen, D-52021, Germany). Journal of Solid State Chemistry, 110(2), 250-5 (English) 1994. CODEN: JSSCBI. ISSN: 0022-4596.

AB **ZnS:Cu,Au,Al; ZnS:Cu,Al** and (**Zn**,Cd)**S:Cu,Al** are the most important **green** emitting **phosphors** for **cathode ray tube** applications. The latter one contains (toxic) cadmium and therefore tends to be eliminated from tube production whenever possible. Alloying with CdS is applied to control the emission color over a very large range. This work shows how the emission color of the **Cd-free phosphors** can be tuned as well, at least over the region of interest for the **green** primary of color TV. Tuning mechanisms control the stoichiometry in the case of **ZnS:Cu,Au,Al** and proper adjustment of the doping levels in the case of **ZnS:Cu,Al**. Relations for the emission color are given; possible microscopic mechanisms are discussed.

IT **1314-98-3, Zinc sulfide,** uses
RL: USES (Uses)
(**phosphors** based on, emission color tuning of **green** emitting)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IT **7429-90-5, Aluminum,** uses **7440-50-8, Copper,** uses **7440-57-5, Gold,** uses
RL: USES (Uses)
(**phosphors** from **zinc sulfide doped** with, emission color tuning of **green** emitting)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-57-5 HCA
CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST emission color tuning **zinc sulfide phosphor**
IT **Luminescence**
(of **zinc sulfide doped** with **aluminum** and **copper** and **gold**)
IT **Phosphors**
(**zinc sulfide**-based, emission color tuning of **green** emitting)
IT **1314-98-3, Zinc sulfide,** uses
RL: USES (Uses)
(**phosphors** based on, emission color tuning of **green** emitting)
IT **7429-90-5, Aluminum,** uses **7440-50-8, Copper,** uses **7440-57-5, Gold,** uses
RL: USES (Uses)
(**phosphors** from **zinc sulfide doped** with, emission color tuning of **green** emitting)

L98 ANSWER 21 OF 44 HCA COPYRIGHT 2005 ACS on STN
118:69299 Defect chemistry and **luminescence** of **aluminum-, gold-,** and **copper-doped zinc sulfide.** Bredol, M.; Merikhi, J.; Ronda, C. (Forschungslab., Philips GmbH, Aachen, D-5100, Germany). Berichte der Bunsen-Gesellschaft, 96(11), 1770-4 (English) 1992. CODEN: BBPCAX. ISSN: 0005-9021.
AB Present high quality **CRT** TV sets employ wurtzite-(**Zn,**Cd)**S:Cu,Al phosphor** or its **Cd-free** variant sphalerite-**ZnS: Cu,Au,Al** to generate the **green** primary color. If prepared properly, both **phosphors** exhibit the desired emission properties. However, the **Au**-codoped material tends to large variations of the emission as a function of the preparation procedure and thus is more demanding in terms of precise control of the manufacturing process. This work aims at a better understanding of these peculiarities. Expts. are presented which demonstrate the large influence of the defect chemical of the **ZnS**-host on the **Au**-related emission, whereas the **Cu**-related emission is affected to a lesser extent. Possible techniques for a fine-tuning of the emission spectrum are discussed and evaluated according to the requirements of screen manufacture
IT **1314-98-3, Zinc sulfide,** properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **aluminum-copper-gold**-doped)
RN 1314-98-3 HCA

CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IT **7429-90-5, Aluminum**, properties **7440-50-8**
, **Copper**, properties **7440-57-5, Gold**,
properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **zinc**
sulfide cool-doped with)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-57-5 HCA
CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
ST doped **zinc sulfide** defect chem
luminescence; aluminum zinc
sulfide defect chem **luminescence; gold**
zinc sulfide defect chem **luminescence;**
copper zinc sulfide defect chem
luminescence
IT **Phosphors**
(**aluminum-copper-gold-doped**
zinc sulfide)
IT **Luminescence**
(of **aluminum-copper-gold-**
doped zinc sulfide)
IT **1314-98-3, Zinc sulfide**, properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **aluminum-**
copper-gold-doped)
IT **7429-90-5, Aluminum**, properties **7440-50-8**
, **Copper**, properties **7440-57-5, Gold**,
properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **zinc**
sulfide cool-doped with)

L98 ANSWER 22 OF 44 HCA COPYRIGHT 2005 ACS on STN
117:126072 Mercury(2+) and **copper**(2+) are ionophores, mediating chloride/hydroxide exchange in liposomes and rabbit renal brush border membranes. Karniski, Lawrence P. (Dep. Intern. Med., Veterans Aff. Med. Cent., Iowa City, IA, 52242, USA). Journal of Biological Chemistry, 267(27), 19218-25 (English) 1992. CODEN: JBCHA3. ISSN: 0021-9258.

AB The ability of inorg. metals to catalyze Cl-/OH- exchange was examined In the presence of an inwardly directed chloride gradient, HgCl2 at concns. ≥30 nM resulted in the quenching of acridine **orange fluorescence** in liposomes, indicating liposomal acidification. In the presence of the reducing agent, ascorbate, CuSO4 at concns. ≥0.6 μM also mediated chloride-dependent liposomal acidification. **Copper** in the absence of ascorbate, iron (with or **without** ascorbate), cobalt, **cadmium**, zinc, nickel, and lead were without an effect. 36Cl efflux from rabbit renal brush border membrane vesicles was also markedly stimulated by micromolar concns. of mercury or **copper** plus ascorbate. Vesicle integrity was not altered by the concns. of mercury or **copper** employed in these studies. In the absence of ascorbate, CuCl stimulated chloride efflux only under anaerobic conditions, confirming that it is the reduced form of **copper** (**Cu**+) that mediates chloride transport across the membrane. In the presence of mercury or reduced **copper**, an inside alkaline pH gradient stimulated the uphill accumulation of 36Cl and 82Br, resp., confirming Cl-/OH- exchange. Studies in liposomes and brush order membranes demonstrate that this is an electroneutral process. Thus, Hg2+ and **Cu**+ are capable of acting as ionophores, mediating electroneutral Cl-/OH- exchange in liposomes and brush border membrane vesicles. This effect could contribute to the toxicity of these 2 metals.

IT **7440-50-8**, **Copper**, biological studies
RL: BIOL (Biological study)
(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, mercury compared to)

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 4-3 (Toxicology)
ST chloride hydroxide exchange mercury **copper**; metal chloride hydroxide exchange liposome kidney; brush border membrane chloride flux metal
IT Kidney, metabolism
(chloride-hydroxide exchange in brush border membrane vesicles of, **copper** and mercury mediation of)
IT Brush border
(chloride-hydroxide exchange in membrane vesicles of renal, **copper** and mercury mediation of)

IT Liposome
(chloride-hydroxide exchange in, **copper** and mercury mediation of)
IT Ionophores
(**copper** and mercury as, chloride-hydroxide exchange in liposomes and renal brush border membranes in relation to)
IT Biological transport
(of chloride, in renal brush border membrane vesicles, **copper** and mercury induction of, dosage and pH in relation to)
IT 7439-97-6, Mercury, biological studies
RL: BIOL (Biological study)
(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, **copper** compared to)
IT **7440-50-8, Copper,** biological studies
RL: BIOL (Biological study)
(chloride-hydroxide exchange in liposomes and renal brush border membranes mediation by, mercury compared to)
IT 14280-30-9, Hydroxide, biological studies
RL: BIOL (Biological study)
(exchange of, with chloride, in liposomes and renal brush border membranes, **copper** and mercury mediation of)
IT 16887-00-6, Chloride, biological studies
RL: BIOL (Biological study)
(exchange of, with hydroxide, in liposomes and renal brush border membranes, **copper** and mercury mediation of)

L98 ANSWER 23 OF 44 HCA COPYRIGHT 2005 ACS on STN
113:240961 Application studies on **red-light emitting zinc sulfide**-cadmium sulfide and europium-activated yttrium oxide sulfide (Y2O2S:Eu3+) **phosphors** used in **cathode-ray tube screens** for **television.**
Abdel-Kader, A.; Elkholy, M. M. (Fac. Sci., Menoufia Univ., Menoufia, Egypt). Journal of Materials Science: Materials in Electronics, 1(2), 95-9 (English) 1990. CODEN: JSMEEV. ISSN: 0957-4522.
AB The (Zn0.27Cd0.73)S:Ag,Cl, (Zn0.77Cd0.23)S:**Cu**,Cl and Y2O2S:Eu3+ **red-light emitting phosphors** were used in the preparation of **cathode-ray tube screens** for **television**. The dependence of screen brightness on both **electron-beam** accelerating voltage and current densities was studied. The theor. calculated intrinsic efficiencies were compared with the exptl. efficiencies. The chromaticity of the **cathode-ray tube screens** was also studied as a function of accelerating high tension and c.d. Cathodoluminescence emission spectra for these **phosphors** at room temperature are also measured.
IT **7440-50-8, Copper,** uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from cadmium **zinc sulfide** doped with, for **cathode ray**

tubes)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **cathode tube screen red** emitting **phosphor**; cadmium **zinc sulfide** **phosphor** television; yttrium oxysulfide europium **phosphor** television
IT **Phosphors**
(cadmium **zinc sulfide** and yttrium oxysulfide)
IT **Luminescence**, cathodo-
(of europium-doped yttrium oxysulfide and **copper**- and silver-**doped** cadmium **zinc sulfide**)
IT **Phosphors**
(cathodoluminescent, from cadmium **zinc sulfide** and yttrium oxysulfide)
IT 126668-33-5, Cadmium **zinc sulfide** (Cd0.23Zn0.77S) 126668-34-6, Cadmium **zinc sulfide** (Cd0.73Zn0.27S)
RL: PRP (Properties)
(cathodoluminescent **phosphors** containing, for **cathode ray tubes**)
IT 7440-22-4, Silver, uses and miscellaneous **7440-50-8**, **Copper**, uses and miscellaneous 7782-50-5, Chlorine, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from cadmium **zinc sulfide** doped with, for **cathode ray tubes**)
IT 12340-04-4, Yttriumoxy sulfide (Y2O2S)
RL: PRP (Properties)
(cathodoluminescent **phosphors** from europium-containing, for **cathode ray tube screens**)
IT 22541-18-0, Europium(3+), uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from yttrium oxysulfide containing, for **cathode-ray tube screens**)

L98 ANSWER 24 OF 44 HCA COPYRIGHT 2005 ACS on STN
113:200989 Rare earth metal oxide-based phosphors. Yoshino, Masahiko; Chokai, Koichi (Kasei Optonix, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02099586 A2 19900411 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-252364 19881006.
AB A phosphor, useful as a **red**-emitting phosphor for **electroluminescent** lamps and **cathode-ray tubes**, comprises an Eu-activated rare earth metal oxide containing 5-3000 ppm **Au** and/or Ag. (Y0.962,Eu0.038)2O3

phosphor containing 40 ppm **Au** had higher **electron beam** luminance and UV-ray luminance than that without **Au**.

IT **7440-57-5, Gold**, uses and miscellaneous
RL: USES (Uses)
(phosphors based on europium-activated rare earth oxides containing, **red**-emitting, for **electroluminescent** lamps and **cathode-ray tubes**)

RN 7440-57-5 HCA
CN Gold (8CI, 9CI) (CA INDEX NAME)

Au

IC ICM C09K011-78
ICS C09K011-80
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST europium rare earth oxide phosphor; **electroluminescent** lamp phosphor; **cathode ray tube** phosphor; rare earth oxide phosphor **gold** silver; **red** phosphor
IT Phosphors
(**red**-emitting, rare earth oxides activated with europium and containing **gold** and silver)
IT 7440-22-4, Silver, uses and miscellaneous 7440-53-1, Europium, uses and miscellaneous **7440-57-5, Gold**, uses and miscellaneous
RL: USES (Uses)
(phosphors based on europium-activated rare earth oxides containing, **red**-emitting, for **electroluminescent** lamps and **cathode-ray tubes**)
IT 128715-56-0, Europium yttrium oxide (Eu0.08Y1.92O3) 130154-13-1, Europium gadolinium yttrium oxide (Eu0.09GdY0.91O3)
RL: PRP (Properties)
(phosphors based on silver- and **gold**-containing, **red**-emitting, for **electroluminescent** lamps and **cathode-ray tubes**)

L98 ANSWER 25 OF 44 HCA COPYRIGHT 2005 ACS on STN
113:162185 Methods for producing **cadmium-free green**-emitting **phosphors** for **cathode-ray tubes**. Borchardt, Richard R.; Gingerich, Richard G. W.; Miller, Michael J. (GTE Products Corp., USA). U.S. US 4925593 A 19900515, 3 pp. (English). CODEN: USXXAM. APPLICATION: US 1989-303599 19890127.

AB Methods for producing **Al**- and **Cu**-activated **ZnS phosphors** are described which entail: forming a mixture of essentially pure **ZnS** and **ZnS** containing Cl- 0.075-2 weight% and other impurities ≤0.5 weight%, an **Al** source material, a **Cu** source material, and an alkali metal flux; firing the mixture at 1775-1825° for .gtorsim.3 h under N2 and CS2, washing with water, and drying.

IT **1314-98-3, Zinc sulfide,** uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **aluminum**- and **copper**-activated, **cadmium-free green**-emitting, for **cathode ray tubes**)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IT **7440-50-8, Copper,** uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by **aluminum** and, **cadmium-free green**-emitting, for **cathode-ray tubes**)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **7429-90-5, Aluminum,** uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by **copper** and, **cadmium-free green**-emitting, for **cathode-ray tubes**)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC ICM C09K011-56
NCL 252301600S
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **zinc sulfide aluminum copper phosphor** prepn; **cadmium free green phosphor** prepn; **cathode ray tube phosphor** prepn
IT Controlled atmospheres
(for **cadmium-free zinc sulfide phosphor** preparation)
IT **Phosphors**
(**green**-emitting, cathodoluminescent, **zinc sulfide** activated by **aluminum** and **copper**, preparation of)
IT 7727-37-9, Nitrogen, uses and miscellaneous

RL: PRP (Properties)
(atmospheres containing carbon disulfide and, in **cadmium-free zinc sulfide phosphor** preparation)

IT 75-15-0, Carbon disulfide, uses and miscellaneous
RL: PRP (Properties)
(atmospheres containing nitrogen and, in **cadmium-free zinc sulfide phosphor** preparation)

IT 7446-70-0, **Aluminum** chloride, uses and miscellaneous 7647-14-5, Sodium chloride, uses and miscellaneous 7758-98-7, **Copper** sulfate, uses and miscellaneous
RL: PRP (Properties)
(in **cadmium-free zinc sulfide phosphor** preparation)

IT **1314-98-3, Zinc sulfide**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **aluminum**- and **copper**-activated, **cadmium-free green**-emitting, for **cathode ray tubes**)

IT **7440-50-8, Copper**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by **aluminum** and, **cadmium-free green**-emitting, for **cathode-ray tubes**)

IT **7429-90-5, Aluminum**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by **copper** and, **cadmium-free green**-emitting, for **cathode-ray tubes**)

L98 ANSWER 26 OF 44 HCA COPYRIGHT 2005 ACS on STN
106:1926 Sequence-dependence of the CD of synthetic double-stranded RNAs containing inosinate instead of guanylate subunits. Ratliff, Robert L.; Liu, Jung Jen; Vaughan, Marilyn R.; Gray, Donald M. (Life Sci. Div., Los Alamos Natl. Lab., Los Alamos, NM, 87545, USA). Biopolymers, 25(9), 1735-50 (English) 1986. CODEN: BIPMAA. ISSN: 0006-3525.

AB The CD spectra and melting profiles were measured for 9 synthetic double-stranded RNAs containing I-C instead of G-C base pairs: poly[r(I)·r(C)], poly[r(I-C)·r(I-C)], poly[r(A-I-C)·r(I-C-U)], poly[r(A-C)·r(I-U)], poly[r(A-I)·r(C-U)], poly[r(A-C-C)·r(I-I-U)], poly[r(A-A-C)·r(I-U-U)], poly[r(A-C-U)·r(A-I-U)], and poly[r(A-U-C)·r(I-A-U)]. CD spectra have not previously been reported for the latter 6 of these polymers. The substitution of inosinate (I) for guanylate (G) **led** to recognizable CD differences, with all but 2 of the polymers having 2 resolved pos. bands at >230 nm. Also, the I-containing RNAs differed from their

G-containing counterparts in the almost complete **absence** of neg. **CD** bands at long wavelengths and in the **redn** . of neg. CD bands near 210 nm. First-neighbor comparisons showed that the CD spectra of the I-containing RNAs were consistent with the nearest-neighbor sequences of the polymers, as previously shown for G-containing RNAs (Gray, D. M. et **al.**, 1981). Moreover, 2 of the 1st-neighbor comparisons involved spectra of poly[(A)·r(U)] and poly[(I)·r(C)], polymers known to be in the A family of conformations in fibers. Thus, differences in the CD spectra of I- and G-containing RNAs could be simply explained as resulting from differences in the hypoxanthine and guanine chromophores, without invoking differences in conformation. Finally, melting temps. of the I-containing RNAs were found to vary much less with base composition than do the melting temps. of G-containing RNAs, since A-U base pairs are closer to I-C than to G-C base pairs in stability.

CC 6-2 (General Biochemistry)
Section cross-reference(s): 73

L98 ANSWER 27 OF 44 HCA COPYRIGHT 2005 ACS on STN
102:36429 Color **cathode-ray tube**. (Kasei Optonix, Ltd., Japan; Sony Corp.). Jpn. Kokai Tokkyo Koho JP 59136379 A2 19840804 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-10114 19830125.

AB A color **cathode-ray tube** contains a rare-earth **red phosphor** (e.g., (Y, Eu)2O2S), a **green phosphor** (e.g., **ZnS:Cu, Al**), and a blue **phosphor** (e.g., **ZnS**:Ag) which when irradiated with an **electron beam** forms a color image. The **red phosphor** contains an addnl. **phosphor** (M1-x-y,Eux,Cey)2O2S, where M = Y, Gd, La, and/or Lu, to increase the uniformity of the image. The exact composition and mixture ratio are given in detail.

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** from metal-doped, for **cathode-ray tube**)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IT **7429-90-5**, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide doped** with, **phosphor**, for color **cathode-ray tube**)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC C09K011-477; H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST rare earth oxide sulfide **phosphor; cathode ray tube phosphor** color
IT **Phosphors**
(for color **cathode-ray tubes**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** from metal-doped, for **cathode-ray tube**)
IT 12031-43-5 12163-19-8 12339-07-0 12340-04-4
RL: PRP (Properties)
(**phosphor** from metal-doped, for color **cathode-ray tube**)
IT 7440-45-1, uses and miscellaneous 7440-53-1, uses and miscellaneous
RL: USES (Uses)
(yttrium oxide sulfide doped with, **phosphor**, for color **cathode-ray tube**)
IT **7429-90-5**, uses and miscellaneous 7440-22-4, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide doped** with, **phosphor**, for color **cathode-ray tube**)

L98 ANSWER 28 OF 44 HCA COPYRIGHT 2005 ACS on STN
94:55948 **Fluorescent** display tube. (Nippon Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 55086869 19800701 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1978-163837 19781222.
AB A **fluorescent** display tube **emitting red light** by low-energy **electron beam** excitation is comprised of a **light-emitting** layer containing a mixture of a conductive material based on stannic oxide and a **red fluorescent** material of M2O3 (M = B, **Al**, Ga, In) doped with Cr2O3. The **light-emitting** layer is coated on a transparent glass plate as the **anode**, disposed opposite to a cathode filament, and sealed in a **vacuum** vessel to give the display tube.
IC C09K011-38; H01J031-15
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)

Section cross-reference(s): 73, 76
ST metal oxide **fluorescent** display tube; chromium metal oxide **electroluminescent** display
IT **Phosphors**
(chromium oxide-doped metal oxides as **red light -emitting**, for electrooptical **display devices**)
IT Oxides, uses and miscellaneous
RL: USES (Uses)
(chromium oxide-doped, **red light-emitting phosphors** from, for electrooptical **display devices**)
IT Optical **display devices**
(electro-, **red light-emitting** layers containing stannic oxide and chromium oxide-doped metal oxide **phosphors** for)
IT 18282-10-5
RL: USES (Uses)
(**red light-emitting** layers containing chromium oxide-doped metal oxide **phosphors** and, for electrooptical **display devices**)
IT 1303-86-2, uses and miscellaneous 1312-43-2 1344-28-1, uses and miscellaneous 12024-21-4
RL: USES (Uses)
(**red light-emitting** layers containing stannic oxide and chromium oxide-doped, for electrooptical **display devices**)
IT 1308-38-9, uses and miscellaneous
RL: USES (Uses)
(**red light-emitting phosphors** from metal oxides doped with, for electrooptical **display devices**)

L98 ANSWER 29 OF 44 HCA COPYRIGHT 2005 ACS on STN
93:248289 **Fluorescent** display tube. (Nippon Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 55092787 19800714 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1979-812 19790105.
AB **Fluorescent** display tubes capable of displaying in brilliant **red** color with low-energy **electron-beam** excitation use a conductive material based on SnO2 and a sp. amount of a Ag-activated **fluorescent** substance. Thus, a **fluorescent** display tube capable of producing a brilliant **red** display was prepared by coating the **anode** of a **vacuum** tube with a mixture containing Zn1-xCdxS:Ag ($0.6 \leq x \leq 0.9$) (10-5 .apprx. 5 + 10-2 g Ag per 1 g Zn1-xCdxS) 1 and a SnO2-based **fluorescent** substance 14-1/14 parts.
IT **1314-98-3D**, solid solns. with cadmium sulfide
RL: USES (Uses)
(silver-doped, **fluorescent** display tubes containing, for optical **display devices**)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═══Zn

IC C09K011-34; H01J029-20
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 73, 76
ST **fluorescent** display tube; stannic oxide **fluorescent** display tube; tin oxide **fluorescent** display tube; zinc cadmium sulfide **fluorescent** display; cadmium **zinc sulfide fluorescent** display; sulfide cadmium zinc **fluorescent** display
IT Optical **display devices**
(electro-, **fluorescent display** tubes for, containing stannic oxide-based conductive composition and silver-doped zinc cadmium sulfide **fluorescent** material)
IT 18282-10-5
RL: USES (Uses)
(**fluorescent** display tubes with conductive composition containing, for optical **display devices**)
IT 1306-23-6D, solid solns. with **zinc sulfide**
1314-98-3D, solid solns. with cadmium sulfide
RL: USES (Uses)
(silver-doped, **fluorescent** display tubes containing, for optical **display devices**)
IT 7440-22-4, uses and miscellaneous
RL: USES (Uses)
(zinc cadmium sulfide doped with, **fluorescent** tubes containing, for optical **display devices**)

L98 ANSWER 30 OF 44 HCA COPYRIGHT 2005 ACS on STN
92:14471 **Phosphor**. Murakami, Katsuo; Anzai, Yoshinori; Ito, Hiroshi (Mitsubishi Electric Corp., Japan). Jpn. Kokai Tokkyo Koho JP 54101787 19790810 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1978-9043 19780130.
AB The **phosphors** are m(Sr1-x-y-z-pBaxCayMzEupO).(1-n)P2O5.nB2O3 (M = ≥1 of Be, Mg, Zn, Cd, and **Mn**, 0 ≤ x ≤ 0.5, 0 ≤ y ≤ 0.2, 0 < z ≤ 0.05, 0.001 ≤ p ≤ 0.15, 1.75 ≤ m ≤ 2.30, 0.05 ≤ n ≤ 0.23). Blue- **green** emission intensity on excitation by UV or cathode rays is stronger than that without partial substitution of alkaline-earth metal(s) by ≥1 of Be, etc., and the **phosphor** exhibits long service life in Hg lamps. Thus, SrHPO4 30.84, SrCO3 3.542, H2BO3 1.979, Eu2O3 0.704, and CdCO3 0.690 g were mixed, heated at 1140° for 2 h in a 20:1 N-H stream, cooled, powdered, and screened. The emission intensity of the **phosphor** (M = Cd, x,y = 0, z,p = 0.02, m = 2, n = 0.16) on excitation at 254 nm was stronger by 5% than one **without Cd**.
IC C09K011-96
CC 76-7 (Electric Phenomena)
ST **phosphor** alk earth borophosphate; strontium borophosphate

phosphor; barium borophosphate **phosphor**; calcium borophosphate **phosphor**; europium activated borophosphate **phosphor**; cadmium borophosphate **phosphor**

IT **Phosphors**
(alkaline-earth borophosphates, activated with europium)

IT 1308-96-9
RL: USES (Uses)
(**phosphors** of alkaline-earth borophosphates activated with)

IT 513-78-0 1633-05-2 10043-35-3, uses and miscellaneous 13450-99-2
RL: USES (Uses)
(**phosphors** of alkaline-earth borophosphates from)

L98 ANSWER 31 OF 44 HCA COPYRIGHT 2005 ACS on STN
87:94416 **Cadmium-free green** emitting cathodoluminescent **phosphor**. Minnier, Henry B.; Layman, H. David (GTE Sylvania, Inc., USA). U.S. US 4038205 19770726, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1976-702624 19760706.

AB The production of a **green**-emitting cathodoluminescent **phosphor** consisting of **ZnS** activated by 10-200 ppm **Cu**, coactivated by 20-600 ppm **Al**, and containing <50 ppm halogen, characterized by a cathodoluminescent emission having x and y coordinate values within the range of 0.250-0.280 and 0.560-0.6150, resp., is described. A powder mixture of **ZnS**, a **Cu** compound, and an **Al** compound is fired at 950-1010° for .apprx.1 min to 2 h in a nonoxidizing atmospheric, preferably in the presence of activated C. The **phosphor** is cooled at a rate of .apprx.2-30°/min to 760-870° in a nonoxidizing atmospheric Further cooling proceeds at a rate of ≥50°/min to a temperature ≤40°. The **phosphor** can be used in tri-dot color **cathode-ray tubes**.

IT **7429-90-5**, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** containing, **green**-emitting, for color-**television tubes**)

RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, **green**-emitting, for color-

television tubes)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IC C09K011-30
NCL 252301600S
CC 76-7 (Electric Phenomena)
Section cross-reference(s): 73
ST **zinc sulfide** cathodoluminescent **green**; **phosphor green zinc sulfide**; television **green phosphor**
IT **Phosphors**
(**zinc sulfide green**-emitting cathodoluminescent, for color-**television tubes**)
IT **7429-90-5**, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** containing, **green**-emitting, for color-**television tubes**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, **green**-emitting, for color-**television tubes**)

L98 ANSWER 32 OF 44 HCA COPYRIGHT 2005 ACS on STN
86:164299 Low-speed electron excitation and **red-fluorescent** indicator tube. Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinchiro; Hase, Takashi; Hiraki, Minoru (Dai Nippon Toryo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 52006383 19770118 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-81947 19750704.
AB An **anode** plate coated on one side with a mixture of photoconductive CdS with at least one of **fluorescent** Y2O2S:Eu, Y2O3:Eu, and YVO4:Eu in a 1:4 to 7:3 ratio and a cathode are sealed in a **vacuum** tube. Thus, CdS:**Cu** 10-4 and Y2O2S:Eu 5 + 10-2 g/g were mixed in a 1:1 ratio in a mortar, and 100 mg was suspended in 0.01% Na2SiO3 100 mL and precipitation-painted on a **Al** plate 1 + 2 cm on a ceramic plate (to 5 mg/cm2). When this system was sealed along with a oxide-coated W wire at 5-mm distance in a hard glass tube at 10-5 torr, the **fluorescence** intensity was 2.0 foot-lambert at 80 V **anode** plate potential and 0.6 V cathode potential and 40 mA current.
IT **7440-50-8**, uses and miscellaneous
RL: DEV (Device component use); USES (Uses)
(in **phosphor** compns. for low-energy **electron-beam**-excited **red**-emitting **display devices**)

RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IC C09K011-46
CC 76-7 (Electric Phenomena)
ST **display device red** emitting; display low energy **electron beam**; yttrium oxide sulfide **phosphor**; vanadate yttrium **phosphor**; cadmium sulfide **phosphor**
IT **Electroluminescent** devices
(low-energy **electron-beam**-excited, **red**-emitting)
IT **7440-50-8**, uses and miscellaneous 7440-53-1, uses and miscellaneous
RL: DEV (Device component use); USES (Uses)
(in **phosphor** compns. for low-energy **electron-beam**-excited **red**-emitting **display devices**)
IT 1306-23-6, uses and miscellaneous 1314-36-9, uses and miscellaneous 12340-04-4 13566-12-6
RL: DEV (Device component use); USES (Uses)
(**phosphor** compns. containing, for low-energy **electron-beam** excited **red**-emitting **display devices**)

L98 ANSWER 33 OF 44 HCA COPYRIGHT 2005 ACS on STN
86:132247 **Red light-emitting** low-energy **electron beam**-excited **fluorescent** display tubes. Kagami, Akiyasu; Narita, Kiniciro; Mimura, Yoshiyuki; Hiraki, Minoru (Dai Nippon Toryo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 51145480 19761214 Showa, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-69860 19750610.
AB Low-energy **electron beam fluorescent** display tubes employ Eu-activated complex metal oxide **phosphors**, ZnO.x(Y1-aEua)VO4 [x = 0.04-0.90; a = 0.01-0.3]. Thus, ZnO 1 and Y0.96Eu0.04VO4 0.38 mol were mixed together, then fired for 2 h at 1000° in the atmospheric to give the **phosphor** ZnO.0.38(Y0.96Eu0.04VO4. The **phosphor** 200 mg was dispersed in H2O 100 mL containing water glass 0.01%, and the dispersion was coated on an **Al anode** sheet (2 + 1 cm) supported on a ceramic substrate. A cathode consisting of a W wire heating element coated with an oxide was positioned 5-mm away from the **phosphor** film. The assembly was then placed in a glass tube, and the tube was sealed under a **vacuum** of 10-5 torr. The **vacuum** within the tube was further improved by using a getter. **Red** light (2.5 ft-Lambert) was emitted on impressing 80 V on the **anode** plate and 1.0 V on the cathode plate (current 50 mA).
IC C09K011-46
CC 76-7 (Electric Phenomena)

Section cross-reference(s): 73, 74
ST zinc oxide **phosphor**; europium vanadate **phosphor**; yttrium vanadate **phosphor**
IT Optical **display devices**
(**electron-beam**, low-energy, **red-light emitting**)
IT **Phosphors**
(zinc oxide-europium yttrium vanadate, for low-energy **electron-beam** display tubes)
IT 1314-13-2, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, europium yttrium vanadate-, for low-energy **electron-beam** display tubes)
IT 13537-11-6D, solid solns. with yttrium vanadate 13566-12-6D, solid solns. with europium vanadate
RL: USES (Uses)
(**phosphors**, zinc oxide-, for low-energy **electron-beam** display tubes)

L98 ANSWER 34 OF 44 HCA COPYRIGHT 2005 ACS on STN
85:115625 Alpha barium zinc cadmium sulfide **phosphors** and method. Fan, Albert K.; Tecotzky, Melvin (United States Radium Corp., USA). U.S. US 3970582 19760720, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1975-637840 19751204.
AB A **phosphor** is described which is isostructural with Ba2MnS3 and has the chemical composition Ba2Zn1-yCdyS3:Aw.zZnS, where A is an activator element consisting of **Mn**. Eu, Ce, Pb, or Tb, $0 \leq y \leq 1$, $0 \leq z \leq 20$, and $0.00001 < w < 0.1$. **Red**-emitting **phosphors** can be **Cd-free** and are activated with **Mn** or Eu. **Green**-emitting **phosphors** can be **Cd-free** and are activated with Ce, Pb, or Tb. The **phosphors** respond to uv, electron, or x-ray excitation. The **phosphors** are manufactured by heating an appropriate mixture in a nonoxidizing atmospheric at 600-1000° for 0.5-30 hr and then cooling the product to room temperature The cooled product is ground and reheated at 600-1000° in a nonoxidizing atmospheric for 0.5-30 hr.
IT **7439-96-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, from barium **zinc sulfide** containing)
RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

IC C09K011-46
NCL 252301600S
CC 76-7 (Electric Phenomena)
Section cross-reference(s): 73
ST **phosphor** barium **zinc sulfide**
IT **Phosphors**

(barium **zinc sulfide, red** or **green** emitting)

IT 12231-65-1D, Barium **zinc sulfide** (Ba2ZnS3), solid solns. with barium cadmium sulfide 51680-95-6D, Barium cadmium sulfide (Ba2CdS3), solid solns. with barium **zinc sulfide** 60488-24-6
RL: USES (Uses)
(**phosphors**)

IT 7439-92-1, uses and miscellaneous **7439-96-5**, uses and miscellaneous 7440-27-9, uses and miscellaneous 7440-45-1, uses and miscellaneous 7440-53-1, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, from barium **zinc sulfide** containing)

IT 12231-65-1
RL: USES (Uses)
(**phosphors**, with **red** or **green** emission)

L98 ANSWER 35 OF 44 HCA COPYRIGHT 2005 ACS on STN
85:27844 **Cadmium-free green light -emitting** cathodoluminescent **phosphor** for color **television tubes**. Layman, H. David; Minnier, Henry B. (GTE Sylvania, Inc., USA). Ger. Offen. DE 2542332 19760415, 18 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1975-2542332 19750923.

AB A **green**-emitting **phosphor** for color **television** picture **tubes**, consisting of **ZnS** activated with 50-150 ppm **Cu** and 100-400 ppm **Al**, is prepared by heating the mixed powders in a double crucible with activated C in the space between the inner and outer crucibles to 950-1010° for 15-60 min in a nonoxidizing atmospheric, cooling from the heating temperature to 760-870° at 2-30°/min in a nonoxidizing atmospheric, and cooling from 760-870° to <40° at ≥50°/min. By using the proper heating and cooling rates, **phosphors** with satisfactory brightness and pure **green** emission can be obtained.

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **copper**- and **aluminum** -activated, for color television)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** activated with **aluminum** and, for color television)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **7429-90-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide**
activated with **copper** and, for color television)
RN 7429-90-5 HCA
CN Aluminum (8CI, 9CI) (CA INDEX NAME)

Al

IC C09K011-30
CC 76-7 (Electric Phenomena)
Section cross-reference(s): 73
ST **phosphor green** color television; **zinc sulfide phosphor**; **copper** activated **zinc sulfide**; **aluminum** activated **zinc sulfide**
IT **Phosphors**
(cathodoluminscent **green**-emitting, for color television)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **copper**- and **aluminum**
-activated, for color television)
IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide**
activated with **aluminum** and, for color television)
IT **7429-90-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide**
activated with **copper** and, for color television)

L98 ANSWER 36 OF 44 HCA COPYRIGHT 2005 ACS on STN
79:151210 Structural and optical properties of **electroluminescent** zinc-cadmium sulfide **phosphors**.
Kulkarni, V. S.; Ambardekar, D. S. (Dep. Chem., Shivaji Univ., Kolhapur, India). Indian Journal of Chemistry, 11(8), 792-5 (English) 1973. CODEN: IJOCAP. ISSN: 0019-5103.
AB **Electroluminescent** (**EL**) properties of (Zn, Cd)S **phosphors** activated by **Cu** and **Mn** were examined, especially with respect to the effect of Cd concentration on the **EL** emission intensity and spectral distribution along with structural relations. In the **yellow** and **orange** **phosphors**, containing **Cu**+, Cd2+, and Mn2+ ions, the role of crystal phase is completely suppressed, as the emissions are due to the transitions between localized levels of Cd2+ or Mn2+ ions, whereas in the case of blue and **green**

phosphors, activated by **Cu**+ ions, they are between the perturbed crystal states and the levels in the crystal band. An increase in Cd content increases the hexagonal phase (α-form) in the final **phosphor** without deterioration of its quality. Similarly complete absence of ZnO and β- **ZnS** phase in the final **phosphor** does not affect the **EL** brightness. Intensity measurements of selected **phosphors** in the series show that they follow the usual exponential relation L = Ae - B/V + V° which tends to be linear for higher **Cd**, concns. **without** affecting the λmaximum

IT **1314-98-3D, Zinc sulfide**, solid solns.
with cadmium sulfide
RL: PRP (Properties)
(**electroluminescent** properties of **copper**- and **manganese**-activated)

RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═Zn

CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)

ST **electroluminescence** cadmium **zinc sulfide** ; **copper electroluminescence** sulfide; **manganese electroluminescence** sulfide

IT **Luminescence**
(**electro**-, of cadmium-**zinc sulfide** **phosphors** activated by **copper** and **manganese**)

IT 16397-91-4, properties 17493-86-6, properties
RL: PRP (Properties)
(**electroluminescence** of cadmium **sulfide**-**zinc sulfide phosphors** containing)

IT 1306-23-6D, Cadmium sulfide, solid solns. with **zinc sulfide 1314-98-3D, Zinc sulfide** , solid solns. with cadmium sulfide
RL: PRP (Properties)
(**electroluminescent** properties of **copper**- and **manganese**-activated)

L98 ANSWER 37 OF 44 HCA COPYRIGHT 2005 ACS on STN
71:34529 Cathodoluminescent screens. (Sylvania Electric Products Inc.). Brit. GB 1153754 19690529, 10 pp. (English). CODEN: BRXXAA. PRIORITY: US 19650616.

AB **Screens** for color **television tubes** comprise 3 sequentially deposited **phosphors**: **green** emitter, **ZnS**/ZnSe doped with Ag; **red** emitter, vanadates or oxides of Y, Gd, or Lu doped with Eu or Sm; blue emitter, **ZnS**:Ag. This system is superior in chromaticity over screens containing **ZnS**/CdS:-Ag as the **green**-emitting component. Dopant:host ratios are 0.001-0.1 weight %.

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent screens containing silver-doped zinc selenide and, for color **television tubes**)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S=Zn

IC H01J
CC 71 (Electric Phenomena)
ST cathodoluminescent screens prodn; **television screens** prodn; color **television screens** prodn; **luminescent** screens prodn; **zinc sulfides** selenides **phosphors**; sulfides selenides Zn **phosphors**; rare earth vanadates **phosphors**; selenides sulfides Zn **phosphors**; vanadates **phosphors**
IT **Luminescent** screens
(cathodo-, **cadmium-free**, for color **television tubes**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent screens containing silver-doped zinc selenide and, for color **television tubes**)
IT 1315-09-9
RL: USES (Uses)
(cathodoluminescent screens containing silver-doped **zinc sulfide** and, for color **television tubes**)
IT 7440-22-4, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent screens containing zinc selenide-**zinc sulfide** solid solns. doped with, for color **television tubes**)

L98 ANSWER 38 OF 44 HCA COPYRIGHT 2005 ACS on STN
56:77451 Original Reference No. 56:15052b-d **Electroluminescent** substances on zinc-mercury sulfide base. Wachtel, Anselm (Westinghouse Electric Corp.). DE 1121751 19620111 (Unavailable). PRIORITY: US 19590420.
AB For **green** to **red luminescence**, the poisonous Se component can be avoided on the base of **Cu** -activated Zn-Hg or Zn-Cd-Hg sulfide, if the latter contain sufficient amts. of a coactivator, differing from the **Cu** activator for 2 units of valence, e.g., Cl, Br, I, **Al**, Sc, Ga, or In. First a Zn-Cd sulfide is manufactured, then 0.016 mole of this product is mixed with 0.004 mole HgS and 5 mg. S and heated to 800-950° for several hrs. in an evacuated quartz tube. In the **absence** of **Cd**, a Zn: Hg ratio of 100: 1 gives a **green** and 3:1 a deep **red luminescence**. In the presence of Cd, Cd: Hg = 1:1 is

recommended, a (Cd + Hg)-total of 2% giving **green**, 7% **yellow**, 17% **orange**, and 39% deep-**red** light. The intensity is greater than on a Zn-Se base, e.g. for an elec. current frequency of 400/sec., 9.6 lumens/sq, m. (88.4 mole% **ZnS** + 11.6% CdS, + 0.63% **Cu** acetate + 0.65% NH4Br + 0.65% NH4I + small amts. S, heated 1 hr. to 950°, + 8.7% HgS + small amts. S, heated 2 hrs. to 900°); for 10,000/sec., 85 lumens/sq. m. (86 mole % **ZnS** + 14% CdS, + **Cu** and coactivators and heat-treatment as above, + 10.5% HgS). The addition of **Mn** as addnl. activator is possible. Cf. CA 53, 8834h.

IT **7440-50-8, Copper**
(**phosphors** containing, **electroluminescent**)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3, Zinc sulfide**
(solid solns. of, with CdS and(or) HgS, containing **Cu** and coactivator, **electroluminescent**)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═Zn

NCL 22F
CC 9 (Electric and Magnetic Phenomena)
IT **Luminescence**
(**electro-**, of CdS-HgS-**ZnS** containing **Cu** and coactivator)
IT **7440-50-8, Copper**
(**phosphors** containing, **electroluminescent**)
IT 1306-23-6, Cadmium sulfide
(**phosphors** from **ZnS**, solid solns. with HgS and **ZnS**, containing **Cu** and coactivator, **electroluminescent**)
IT 1344-48-5, Mercury sulfide, HgS
(solid solution with CdS and(or) **ZnS**, containing **Cu** and coactivator, **electroluminescent**)
IT **1314-98-3, Zinc sulfide**
(solid solns. of, with CdS and(or) HgS, containing **Cu** and coactivator, **electroluminescent**)

L98 ANSWER 39 OF 44 HCA COPYRIGHT 2005 ACS on STN
54:108067 Original Reference No. 54:20515h-i,20516a-c (Zn,Hg)S and (Zn,Cd,Hg)S **electroluminescent phosphors.**
Wachtel, A. (Westinghouse Elec. Corp., Bloomfield, NJ). Journal of the Electrochemical Society, 107, 682-8 (Unavailable) 1960. CODEN: JESOAN. ISSN: 0013-4651.
AB Introduction of Hg into **ZnS:Cu phosphors**

causes a shift in emission to longer wave lengths which, for moderate substitution, is about 4 times as high as that caused by similar mol. concns. of Cd. At sufficient activator concns. **electroluminescence** (**EL**) is observed. For compns. emitting in the **red** end of the spectrum, the quantum efficiency of the **EL** was of the same order of magnitude as that of **green**-emitting **ZnS:Cu**, Cl. This is attributed to the cubic modification of the system, favored by the presence of HgS, even in ternary (Zn,Cd,Hg)S composition whose concentration of **Cd** would, in the **absence** of Hg, result in hexagonal and non-**EL** systems. Procedures for the preparation of (Zn,Hg)S and (Zn,Cd,Hg)S **EL phosphors** have been described. All procedures involve firings with HgS in sealed tubes, by using only prefired raw materials. Especially for low-frequency excitation, the substitution of Hg for Zn enables the use of Ga or In as coactivators, presumably due to a decrease in trap depth caused by lowering of the conduction band. For **phosphors** emitting in the **red** end of the spectrum, the relative heights of the 2 emission bands are primarily dependent on Hg concentration Their identity cannot be assumed in terms of an analogy with the blue- and **green**-emission bands in **ZnS:Cu phosphors**. The (**Zn**,Hg) **S:Cu** and (ZnCd,Hg)**S:Cu** **EL phosphors** are preferable to the ZnSe:**Cu** **EL phosphors**, mainly because of their better response at low frequencies of excitation. At higher HgS concns., **EL** emission occurring entirely in the infrared has been obtained. A serious disadvantage is, however, the high volatility of HgS which necessitates special techniques of **phosphor** preparation

IT **7440-50-8, Copper**
(**phosphors** containing, **electroluminescence** of)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3, Zinc sulfide**
(**phosphors** from CdS, HgS and, **electroluminescence** of)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═Zn

(**phosphors, electroluminescence** of **Cu**
-contg.
CC 3 (Electronic Phenomena and Spectra)
IT **Luminescence**
(**electro-**, of CdS and **ZnS** containing HgS)
IT Trapping

(in **phosphors, electroluminescence** and)
IT Mercury sulfide, HgS, **phosphors** of CdS, **ZnS** and
(**electroluminescence** of)
IT **7440-50-8, Copper** 7440-55-3, Gallium
7782-50-5, Chlorine
(**phosphors** containing, **electroluminescence** of)
IT 7440-74-6, Indium
(**phosphors** containing, **electroluminescent**)
IT **1314-98-3, Zinc sulfide**
(**phosphors** from CdS, HgS and,
electroluminescence of)
IT 1306-23-6, Cadmium sulfide
(**phosphors** of HgS, **ZnS** and,
electroluminescense of)
IT **1314-98-3, Zinc sulfide**
(**phosphors, electroluminescence** of **Cu**
-containing)

L98 ANSWER 40 OF 44 HCA COPYRIGHT 2005 ACS on STN
50:11258 Original Reference No. 50:2304f-g **Luminous** discharge tube. Tellmann, Wilhelm; Tellmann, Wilhelm; Zapf, Helmut DE 828422 19520117 (Unavailable). APPLICATION: DE .
AB The Hg vapor-filled discharge tube is lined with a **luminescent** layer composed of **Cd** silicate **free** from excess SiO2 and activated by Li2O and **Mn** less than 0.2%, possibly in admixt. with other **luminescent** substances, such as Zn silicate or tungstate. A c.d. of 0.01-0.3 amp./sq. cm. yields a particularly high output of a **yellow -red luminescent** light.
IT **7439-96-5, Manganese**
(**phosphors** containing, elec. lamp coated with)
RN 7439-96-5 HCA
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

NCL 21F; 83-03
CC 3 (Electronic Phenomena and Spectra)
IT **Luminescent** substances
(elec. lamp containing, Hg-vapor filled)
IT Lamps, electric
(**luminescent**, Hg-vapor-filled)
IT Marking
(metals with **luminescent**)
IT Cadmium silicate, **phosphor**
Zinc tungstate, **phosphor**
(elec. lamp containing)
IT 12057-24-8, Lithium oxide, Li2O
(**phosphor** containing, elec. lamp containing)
IT **7439-96-5, Manganese**
(**phosphors** containing, elec. lamp coated with)
IT 11126-29-7, Zinc silicate

(**phosphors**, elec. lamp containing)

L98 ANSWER 41 OF 44 HCA COPYRIGHT 2005 ACS on STN
45:38992 Original Reference No. 45:6684c-i,6685a-i,6686a-g Antibiotics from actinomycetes. V. Actinomycin C. Brockmann, Hans; Grubhofer, Nikolaus; Kass, Wilhelm; Kalbe, Hans (Univ. Gottingen, Germany). Chemische Berichte, 84, 260-84 (Unavailable) 1951. CODEN: CHBEAM. ISSN: 0009-2940.

AB cf. C.A. 44, 6914c; 45, 5230h. A new antibiotic, actinomycin C (I), has been isolated from Streptomyces chrysomallus (II) and is investigated chemically. II is grown at 28° on a nutrient containing, per 1., 20 g. glycerol, 10 g. KNO3, 5 g. K2HPO4, 5 g. NaCl, 5 g. MgSO4.7H2O, and 0.01 g. FeSO4.7H2O. After 26 days the mycelium is filtered, dried at 100°, powdered, and extracted with C6H6. The residual aqueous solution is exhaustively extracted with BuOAc, the extract evaporated, and the residue combined with the C6H6 extract and filtered through an Al2O3 II column. Upon development of the chromatogram with C6H6 an **orange-red** zone, containing I, is obtained and eluted with EtOAc. The eluate is concentrated in vacuo and the residue diluted with twice its volume CS2, causing I to crystallize. It is washed with EtOAc-CS2 (1:2) and recrystd. from EtOAc, giving hexagonal alizarin **red** bipyramids, m. 252° (decomposition). Because the composition of I seems to change with the age of the strain, I obtained in the early expts. is designated "old" (Ia), that obtained later, "new" (Ib). Ia, C62H89O17N11, contains 59.05% C, 7.07% H, 12.24% N, 5.4% N-Me, 0.63% active H; d. 1.0155, [α]17D -319° ± 3°, -312°, -290°, -250°, -240° (c 5, 2.5, 1, 0.5, 0.25, EtOH); solubility in absolute EtOH is 7%, in C6H6, 27%, in CHCl3 65%, Me2CO 120%, H2O 0.14%; mol. weight 705 (Rast), 915 (Beckmann, PhOH), 876-944 (Barger-Rast, tetrahydrofuran). Ib, C60H83O16N11, contains 59.65% C, 6.87% H, 12.75% N; [α]17D -309° ± 3° (c 2.5, EtOH). I arrests the growth of Staphylococcus aureus in dilns. of up to 1:10,000,000 and Escherichia coli in dilns. of up to 1:10,000. I is toxic to a mouse in doses of 50 mg./kg. when administered orally as aqueous solution and 5 mg./kg. on intraperitoneal administration, within 24 hrs. I seems to be different from actinomycin A (Waksman and Tischler, C.A. 36, 2883.8) and B (Dalgliesh, et **al.**, C.A. 45, 6160h). On catalytic hydrogenation in AcOH in the presence of PtO2 100 mg. Ia absorbs 1.8 cc. H and 330.9 mg. Ib 6.1 cc. H, from which mol. wts. of 1280 and 1218 are calculated On dissolving the light-**yellow** hydrogenation product (III) of Ib in C6H6 the solution changes to **red-yellow** by autoxidation, giving 92% Ib. Ia (175 mg.) in BuOH and 50% HClO4, gives 180 mg. C62H89O17N11.3HClO4, m. 192° (corrected). Ia refluxed 2 hrs. with Ac2O and C5H5N is recovered unchanged. Reductive acetylation of 200 mg. Ia in 2 cc. Ac2O and 1 drop C5H5N with 500 mg. Zn dust gives 140 mg. leucoacetate, C62H89O17N11Ac2, light-**yellow** rectangular platelets, m. 253° (corrected). I does not seem to contain primary or secondary NH2 groups and gives a neg. ninhydrin reaction. With Nessler's reagent I gives a gray-brown precipitate which can be used

for the marking of I on the paper chromatogram. Because of indications that I may be a mixture of closely related compds. Ib is subjected to a 40-step countercurrent distribution (C.A. 44, 7096e), by using the solvent pairs BuOH-AcOH, C6H6-AcOH, and HCO2H-CH2Cl2 and thus producing a distribution curve which indicates that Ib is a pure compound Although Ib is soluble in ether-HCl only to 0.1% in each phase, 80 mg. is fractionated in an apparatus that holds 800 cc./step. Fractions 19-25 are redistributed in a 100-cc./step apparatus, giving a curve that indicates a mixture However, since I is sensitive towards acids it is possible that in ether-HCl some hydrolysis products are formed although I is not changed in 6% HCl during 2 hrs., the time required for the distribution process. The fact that threonine-free fractions are obtained can be explained only by the assumption that I is a mixture From a comparison of the curves obtained from various prepns. of I produced by the original strain and by strains repeatedly transferred, it is found that the latter produce more complicated mixts. than the former. For the elucidation of the amino acid portion of I, uniform samples must be used, for that of the chromophoric part, a mixture can be used. On hydrolysis of I with HCl a black-brown precipitate is obtained which originates from the amino acid-free portion and contains some black melanin-like products from which no crystalline compound can be isolated. Ia (487 mg.) is heated with 3 cc. concentrated HCl 9 hrs. in a sealed tube at 125° and the tube is opened in such a way that the gases are passed through B(aOH)2, giving 51.8 mg. BaCO3 (0.75 mol./ mol. I). The black precipitate amounts to 103 mg. (24%). The acid solution is decolorized and evaporated, giving 69% residue (IV) with 3.3% NH2-N and [α]16D -47.8°. IV contains 2.06 mg. NH3-N, determined with H2PtCl6. Refluxing 36 hrs. 6.18 g. Ia in 40 cc. 30% H2SO4 at 110° gives 0.72 mol. CO2 and 1.4 g. (23%) black precipitate containing 54.53% C, 5.11% H, 6.22% N, and 1% N-Me.

The filtrate is freed of H2SO4 with Ba(OH)2 and evaporated to dryness, giving 3.9 g. (63%) crystalline residue (V). V (1.93 g.) is extracted with 20 cc. EtOH, leaving 0.83 g. residue (VI). The residue (1.1 g.) of the alc. extract is extracted twice with 10 cc. 99% EtOH and leaves 90 mg. residue (VII) which, after 2 crystns., m. 245-55° and is identified paperchromatographically as threonine (VIII). The filtrate of VII is treated with 30 cc. saturated alc. CdCl2 solution, the precipitate formed is **freed** of **Cd** with H2S, and the concentrated filtrate treated with reinecke acid (IX), giving 257 mg. L-proline (X) reineckate (Xa), m. 198°, from which 60 mg. X, m. 212°, [α]17D -78° (H2O) (picrate m. 146°) is regenerated. The filtrate of Xa is freed of IX and concentrated; it shows the RF value of valine (XI) and gives a small quantity of needles, m. 160°, which give a **red** ninhydrin reaction and an intense odor of NH2Me when heated with NaOCl. Recrystn. of VI and sublimation (170°/0.01 mm.) give 533 mg. sublimate (XII), showing the RF values of isoleucine (XIII) and XI. XII is dissolved in 2 N NaOH, treated with 3,5-(O2N)2C6H3COCl, and the mixture adjusted to pH 4, causing the separation of crystals, m. 186°. Adjusting the pH to 3 gives 80 mg. XIII 3,5-dinitrobenzoate, m. 178°, from which, on hydrolysis with HCl, 15 mg. XIII, m. 247°, [α]17D

-14.4° (H2O) is regenerated. In another experiment with 300 mg. IV, 70 mg. XIII, m. 276°, [α]17D -15.2° (H2O) is obtained. IV with 9.6% total N, 3.1% amino N, and 5.1% N-Me is separated paperchromatographically (for details see original paper), with o-cresol as mobile phase and a 0.4% ninhydrin solution in BuOH as developer. The 6 zones are cut out and eluted with H2O. Zone 1 gives 4.3% VIII, m. 240-2°, [α]20D 7° (H2O), which, oxidized with HIO4 gives AcH. Because of overlapping, zones 2-4, containing sarcosine (XIV), D-XI, and D-alloisoleucine (XV), are eluted together and rechromatographed with BuOH-20% AcOH as phase pair, giving the same sequence of zones. Zone 2 gives 1.6% XIV, identified by RF values of pure XIV (RF in o-cresol 0.34, in BuOH-AcOH 0.17-0.21, in PhCH2OH 0.08, in PhOH 0.73, in sec-BuOH 0.84, in collidine 0.08). Zone 3 gives 1% D-XI, m. 296°, [α]16D 5.8° (H2O), -24.9° (20% HCl). Zone 4 gives 24% XV, m. 284°, [α]16D -15.6° (H2O), -31.8° (c 2.7, 20% HCl) (phenylisocyanate m. 157°; naphthylisocyanate m. 167-8°; HCO derivative, prepared by heating 20 mg. with 1 cc. anhydrous HCO2H, m. 125°). Decomposition of 10 mg. with ninhydrin according to Lohr (C.A. 44, 5422h) gives an optically active 2,4-dinitrophenylhydrazone, m. 130°. Zone 5 gives 20% X, m. 128°, [α]18D -75.4° (H2O) (reineckate m. 199°). Zone 6 gives 42% N-methyl-L-valine (XVI), m. 290°, [α]16D 16.5° (H2O), 28.6° (10 Ngr; HCl). To prevent the formation of a black precipitate on hydrolysis of I, 230 mg. I is heated with 4 cc. concentrated HCl and 160 mg. SnCl2 16 hrs. at 90°, causing the formation of a **red** precipitate which is extracted with BuOH. The aqueous solution is freed of Sn with H2S, evaporated, and gives the same 6 amino acids in the paper chromatogram. The **yellow-red** BuOH solution is shaken with 1 cc. 0.5% H2O2, causing a deepening of the color, evaporated in vacuo, the residue dissolved in CHCl3, filtered through a silica column, and evaporated, giving a **red** powder from which, on hydrolysis with concentrated HCl, no amino acids are obtained (paper chromatogram). Heating 170 mg. Ib with 5 cc. AcOH, 3 cc. HI, and 0.8 g. PH4I 12 hrs., evaporating the mixture, distributing the residue in 10 cc. H2O and 10 cc. C6H6, and filtering the dried C6H6 solution through a silica column give a small brown zone and an intense blue **fluorescent** filtrate which, evaporated, gives colorless needles, m. 114-15°. On hydrolysis with concentrated HCl no amino acids are obtained. In the original aqueous phase the amino acids, except VIII, are found. Heating 598 mg. Ib with 12 cc. 6 Ngr; HCl 25 min. at 100°, diluting the mixture to 60 cc., extracting it with ether, and evaporating the ether leaves no residue. The aqueous solution is evaporated in vacuo, the residue dissolved in borate buffer solution (pH 10), and steam distilled, giving 5.9 mg. NH3. When 200 mg. Ib is kept 2 weeks with 20 cc. AcOH-10% HCl (1:1) at 37° and a sample is tested in a bidimensional paper chromatogram with PhOH-collidine as mobile phases, only weak spots of XVI and XV can be detected. After 8 weeks the spots of the other

amino acids appear. After 16 weeks the mixture is evaporated in a desiccator and the residue is extracted successively with CHCl3, Me2CO, and BuOH, leaving a small amount of a black residue. The residues of the 3 exts. are **red**-brown amorphous products, give an intense **green** color with SnCl2, and are free of amino acids. On heating with 20% HCl 24 hrs. a black melanin-like precipitate is formed and in the filtrate all amino acids are found in the paper chromatogram. Heating 1 g. Ia with 10 cc. 20% HCl 20 min. at 105°, dissolving the residue of the evaporated (in vacuo) solution in 10 cc. H2O, filtering the solution through an Al2O3 column, and washing the column with 0.1 N HCl produces a **yellow-red** zone [zone base (XVII)] and a **yellow** filtrate. The filtrate containing the eluate base (XVIII) is concentrated in vacuo and treated with HgCl2 and the precipitate formed is decomposed with H2S, filtered, and evaporated, giving the HCl salt of XVIII which is readily hydrolyzed, forming the free XVIII; it gives an **orange-red** precipitate with HAuCl4 and a **yellow**-brown picrolonate. XVII is eluted with C5H5N-H2O (1:1) and forms an amorphous picrolonate. On prolonged treatment with HCl, XVIII changes to XVII. To obtain XVIII in a better yield, I is heated with 6 N HCl 5 min. at 100°, the mixture is evaporated in vacuo, and the residue extracted with H2O. The unchanged I is treated again in the same way until completely hydrolyzed. To remove XVII the aqueous extract is passed through an Al2O3 column, XVIII is extracted from the filtrate with CHCl3, and XVIII-HCl is formed. It gives an **orange-red** picrate. XVII and XVIII treated with HNO2 evolve only very little N but form **red** NO compds. Hydrolysis of Ib with azeotropic HCl 0.5 hr. on a water bath, evaporating the mixture in vacuo, extracting the residue with BuOH, passing the BuOH solution through Al2O3, eluting XVIII with BuOH, washing the column with EtOH, H2O, and, finally, with 0.1 N NaOH, acidifying the alkaline eluate, and extracting with BuOH-CHCl3 (1:9) give XVII-HCl which is further purified via its picrate. XVII shows an amphoteric behavior and can be esterified with MeOH-HCl. XVII and XVIII are reduced by SnCl2, giving a deep-**green** intermediate (XIX), λmaximum 684, 622, 568 mμ (AcOH), and a pale- **yellow** leuco compound which is oxidized by air again via XIX to the original **red-yellow** compound

CC 11C (Biological Chemistry: Microbiology)

L98 ANSWER 42 OF 44 HCA COPYRIGHT 2005 ACS on STN

43:24614 Original Reference No. 43:4577i,4578a-e The yield of **luminescence** of crystal **phosphors** in its dependence on the wave length of the exciting light. Alentsev, M. N. Doklady Akademii Nauk SSSR, 64, 479-82 (Unavailable) 1949. CODEN: DANKAS. ISSN: 0002-3264.

AB (1) Comparison of the light scattered by 2 surfaces, one coated with the **phosphor**, the other with a substance the scattering coefficient of which is known to be independent of the wave length λ (e.g. MgO), exposed to the same incident intensity I, in a λ region where the **phosphor** does not absorb, yields the ratio a of the scattering coeffs. The same comparison in a λ region where the **phosphor** absorbs and is excited,

yields a different ratio b. A third ratio, c, is obtained on simultaneous exposure to the exciting λ and to quenching infrared radiation. The **luminescent** energy is proportional to b - c, the absorbed energy to a - c, and the relative yield (at a given λ) p = (b - c)/(a - c). In visual observation, it is necessary to correct for the spectral sensitivity of the eye. Measurements of ρ as a function of the exciting λ, or **ZnS.Cu** (10-4 g./cc.) with Co (I), **ZnS.Cu** (10-5) with Co (II) and **ZnS**. **CdS** (25% **Cd**) **without** activator (III), all 3 susceptible to quenching by infrared, showed a decrease of ρ with increasing λ. However, unlike **fluorescent** solns. of dyes, crystal **phosphors** show beginning drop of ρ at λ considerably shorter than the mean λ of the emission spectrum. Thus, I has a maximum of emission at 520 mμ, but ρ falls at about 470-480 mμ; III has an emission maximum in the **orange**, but ρ drops completely at about 500 mμ. For a **ZnS.Cu** (10-5) **phosphor** without Co (IV), not susceptible to infrared quenching, b was determined directly, whereas c was taken as equal to that of II, on the assumption that inclusion of Co does not materially alter the absorption. The values of ρ thus determined also show rapid fall at λ, considerably shorter than the mean λ of emission. (2) The quantum yield of **luminescence**, φ, was determined by comparing its brightness with that of a dye solution exposed to the same λ at the same intensity (Solomin, C.A. 37, 833.3), the concentration of the dye being sufficient to ensure complete absorption, and the absorption of the **phosphor** at the given λ being determined preliminarily. For willemite, φ proves to be constant at λ less than 260 mμ. For **ZnS** and **ZnS .CdS** (25% **Cd**), both **without** activator, φ between 220 and 380 mμ, did vary with λ, both the variation disappeared completely or almost completely when the intensity of excitation was reduced. One can thus conclude that, at sufficiently weak excitation, φ independent of λ.

IT **7440-50-8, Copper**
(**phosphors** containing, **luminescence** of, dependence on wave length of exciting light)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **1314-98-3, Zinc sulfide**
(**phosphors**, exciting radiation and **luminescence** of)
RN 1314-98-3 HCA
CN Zinc sulfide (ZnS) (9CI) (CA INDEX NAME)

S═Zn

CC 3 (Subatomic Phenomena and Radiochemistry)
IT **Luminescence**
(of **phosphors**, dependence on wave length of exciting light)
IT 14374-77-7, Willemite
(**luminescence** of, dependence on wave length of exciting light)
IT 7440-48-4, Cobalt
(**phosphors** containing)
IT **7440-50-8, Copper**
(**phosphors** containing, **luminescence** of, dependence on wave length of exciting light)
IT 1306-23-6, Cadmium sulfide
(**phosphors** of **ZnS** and, **luminescence** dependence on wave length of exciting light)
IT **1314-98-3, Zinc sulfide**
(**phosphors**, exciting radiation and **luminescence** of)

L98 ANSWER 43 OF 44 HCA COPYRIGHT 2005 ACS on STN
33:19480 Original Reference No. 33:2826b-c Discharge lamps. (N. V. Philips' Gloeilampenfabrieken). GB 495632 19381116 (Unavailable). APPLICATION: GB .
AB A high-pressure metal-vapor lamp containing Hg with Cd and (or) Zn in such quantities that during normal operation their vapors are unsatd. has Cd 1.5-6 or Zn 0.75-3%, or a mixture containing specified quantities of Cd and Zn, and is provided with a layer of **red -fluorescent** material. Thus, electrodes are spaced 22 mm. apart in a quartz envelope having an internal diameter of 7 mm. and containing A at about 20 mm. Hg with 7.5 mg. Hg and 0.2 mg. Cd. The tube is secured to a bulb having an internal coating of Zn **Cd** sulfide with or **without** a blue **fluorescent** material which may be **ZnS** and the space between the tube and the bulb is exhausted.
CC 4 (Electrochemistry)

L98 ANSWER 44 OF 44 HCA COPYRIGHT 2005 ACS on STN
17:9092 Original Reference No. 17:1598e-i,1599a-b Subsidiary valence. XXVI. Complexes with sulfur dioxide. Ephraim, Fritz; Aellig, Clara Helvetica Chimica Acta, 6, 37-53 (Unavailable) 1923. CODEN: HCACAV. ISSN: 0018-019X.
AB The absence of relation between ionizing power of a solvent and its ability to form addition compds. is indicated by the fact that SO2, in contrast to H2O and NH3, forms addition compds. only with iodides and thiocyanates of alkali and alkaline earth metals and badly defined products with **Al** halides, The tensions of these compds. are nearly independent of the nature of the metal ion. It is here shown that alkali metal salts of fatty acids and BzOH add SO2, the capacity being least in formates and increasing in the order acetate, propionate, butyrate, valerate. Li salts add no SO2, Na less well than K, Rb and Cs. The formates add: Na, 0; K, about 0.5; Rb and Cs, 1 mol. SO2. All other compds. add 1 mol. at temps. above 0°. Gaseous SO2 is taken up slowly and the reaction is

completed with difficulty. Liquid SO2 is preferable. The Na salts, even out of contact with air, gradually lose SO2 much as silicic acid gel loses water on aging. The K, Rb and Cs compds. are stable up to about 80° and loss of SO2 is accompanied by other decomposition reactions. Formates, but no other salts, decompose on heating with separation of S. The addition compds. at room temperature are colorless except the formates, which are **orange**, like those of the alkali iodides, and impart a **yellow** color to the liquid SO2. The Cs compds. are soluble in liquid SO2 but impart no color to it. The cause of the **yellow** color of concentrated NaHSO3 solns. was investigated. It is not due to impurities as has frequently been assumed. With purest materials the color invariably developed when SO2 was **led** into solns. of NaOH, KOH, NH4OH or of alkali carbonates, sulfites, bisulfites, formates, acetates and to a less degree in Ca(OH)2 and (AcO)2Zn. No color developed in alkali chlorides, nitrates, sulfates, bisulfates or in alkaline earth (except Ca) hydroxides or carbonates, in Mg or **Cd** hydroxides or in **free** H2SO4. The color does not appear in solns. more dilute than 0.5 N and reaches a maximum in 5 N solns., in which it is quite stable. It is about the tint of dilute chromate solns. and its absorption spectrum was almost identical with that of chromate solution of the same tint. That a compound is formed is shown by the fact that the solns. upon dilution do not follow Beer's law; a 5 N solution of the K salt showed more than 10 times the color intensity of a N solution The **yellow** compound could not be isolated. It is certain that the SO2 content of the **yellow** solution exceeds that required for the formula of bisulfite by only an inconsiderable amount

CC 6 (Inorganic Chemistry)

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=> d que l87
L3            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12064-18-5/RN
L4            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12060-59-2/RN
L5            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-57-5/RN
L6            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-50-8/RN
L7            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7440-10-0/RN
L8            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7439-96-5/RN
L9            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  7429-90-5/RN
L10           1 SEA FILE=REGISTRY ABB=ON  PLU=ON  1314-98-3/RN
L11           9 SEA FILE=REGISTRY ABB=ON  PLU=ON  (SR(L)TI(L)O(L)PR)/ELS(
                L)4/ELC.SUB
L13          38 SEA FILE=REGISTRY ABB=ON  PLU=ON  (SR(L)TI(L)O(L)AL)/ELS(
                L)4/ELC.SUB
L14           4 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)CU(L)AL)/ELS(
                L)4/ELC.SUB
L16          19 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)CU)/ELS(L)3/E
                LC.SUB
L17           3 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)S(L)AL)/ELS(L)3/E
                LC.SUB
L20          11 SEA FILE=REGISTRY ABB=ON  PLU=ON  (ZN(L)GA(L)O(L)MN)/ELS(
                L)4/ELC.SUB
L21         403 SEA FILE=HCA ABB=ON  PLU=ON  L3
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L22 608 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(W)ZINC(W)OXIDE OR GA2ZNO4OR ZINC(W)GALLIUM(W)OXIDE OR ZNGA2O4
L23 14136 SEA FILE=HCA ABB=ON PLU=ON L4
L24 19908 SEA FILE=HCA ABB=ON PLU=ON STRONTIUM#(A)TITANATE# OR SRTIO3
L25 147195 SEA FILE=HCA ABB=ON PLU=ON L5
L26 251391 SEA FILE=HCA ABB=ON PLU=ON GOLD OR AU
L27 480212 SEA FILE=HCA ABB=ON PLU=ON L6
L28 1098393 SEA FILE=HCA ABB=ON PLU=ON CU OR COPPER
L29 19596 SEA FILE=HCA ABB=ON PLU=ON L7
L30 167708 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM OR PR
L31 171501 SEA FILE=HCA ABB=ON PLU=ON L8
L32 546903 SEA FILE=HCA ABB=ON PLU=ON MANGANESE OR MN
L33 354400 SEA FILE=HCA ABB=ON PLU=ON L9
L34 1324892 SEA FILE=HCA ABB=ON PLU=ON AL OR ALUMINUM OR ALUMINIUM

L35 25460 SEA FILE=HCA ABB=ON PLU=ON L10
L36 35413 SEA FILE=HCA ABB=ON PLU=ON ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS
L37 9 SEA FILE=HCA ABB=ON PLU=ON L11
L38 18 SEA FILE=HCA ABB=ON PLU=ON PRASEODYMIUM(2A)STRONTIUM(2A)TITANIUM(2A)OXIDE OR (PR(2A)SR(2A)TI(2A)O)
L39 24 SEA FILE=HCA ABB=ON PLU=ON L13
L40 96 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)STRONTIUM(3A)TITANIUM(3A)OXIDE OR (AL(3A)SR(3A)TI(3A)O)
L41 3 SEA FILE=HCA ABB=ON PLU=ON L14
L42 386 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)COPPER(3A)ZINC(3A)SULFIDE OR (AL(3A)CU(3A)ZN(3A)S)
L43 40 SEA FILE=HCA ABB=ON PLU=ON L16
L44 5447 SEA FILE=HCA ABB=ON PLU=ON COPPER(3A)ZINC(3A)SULFIDE OR (CU(3A)ZN(3A)S)
L45 59 SEA FILE=HCA ABB=ON PLU=ON L17
L46 1107 SEA FILE=HCA ABB=ON PLU=ON ALUMINUM(3A)ZINC(3A)SULFIDE OR AL2ZNS4 OR (AL(3A)ZN(3A)S) OR ZNAL2S4
L47 17 SEA FILE=HCA ABB=ON PLU=ON L20
L48 97 SEA FILE=HCA ABB=ON PLU=ON GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O)
L49 882677 SEA FILE=HCA ABB=ON PLU=ON (EL OR E(W)L OR LED OR L(W)E(W)D OR OLED ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR ORGANO OR ORG#)(2A)LUM!N? OR LIGHT?(2A)(EMIT? OR EMISSION? OR SOURCE?) OR LUMINES####### OR FLUORES? OR PHOSPHORES?)/BI,AB OR LED/IT OR PHOSPHOR# OR LUMIN?
L50 132749 SEA FILE=HCA ABB=ON PLU=ON L49 AND ((L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40 OR L41 OR L42 OR L43 OR L44 OR L45 OR L46 OR L47 OR L48))
L51 19687 SEA FILE=HCA ABB=ON PLU=ON L50 AND (RED# OR REDDISH OR YELLOW? OR GREEN? OR ORANG?)
L60 45434 SEA FILE=HCA ABB=ON PLU=ON CRT# OR (DISPLAY? OR ELECTROCHROMIC## OR ORHOTOELECTROCHROMIC###)(2A)(DEVICE## OR UNIT##) OR (CATHODE## OR CATHODE#(A)RAY### OR TELEVISION#)(2A)(TUBE## OR SCREEN# OR DISPLAY####)

L61 19527 SEA FILE=HCA ABB=ON PLU=ON (COMP# OR COMPUTER## OR PORTABLE? OR LAPTOP? OR PLASMA## OR TV OR TELEVISION)(2A)(DISPLAY? OR SCREEN? OR MONITOR?)
L71 42 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(PRASEODYMIUM OR PR OR L7)
L72 47 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)
L73 21 SEA FILE=HCA ABB=ON PLU=ON (L4 OR STRONTIUM#(A)TITANATE # OR SRTIO3)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(AL OR ALUMINUM OR ALUMINIUM OR L9)(3A)(PRASEODYMIUM OR PR OR L7)
L74 811 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(COPPER OR CU OR L6)
L75 38 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(GOLD OR AU OR L5)
L76 221 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)
L77 63 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(COPPER OR CU OR L6)
L78 8 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(GOLD OR AU OR L5)
L79 6 SEA FILE=HCA ABB=ON PLU=ON (L10 OR ZINC(A)(SULFIDE OR MONOSULFIDE) OR ZNS)(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(ALUMINUM OR ALUMINIUM OR AL OR L9)(3A)(COPPER OR CU OR L6)(3A)(GOLD OR AU OR L5)
L80 42 SEA FILE=HCA ABB=ON PLU=ON (GALLIUM(3A)MANGANESE(3A)ZINC(3A)OXIDE OR (GA(3A)MN(3A)ZN(3A)O))(3A)(DOPE# OR DOPANT# OR DOPING# OR TRACE# OR INTERSPER?)(3A)(MANGANESE OR MN OR L8)
L81 1062 SEA FILE=HCA ABB=ON PLU=ON (L71 OR L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80)
L82 846 SEA FILE=HCA ABB=ON PLU=ON L81 AND L49
L83 244 SEA FILE=HCA ABB=ON PLU=ON L82 AND L51
L87 37 SEA FILE=HCA ABB=ON PLU=ON L83 AND (L60 OR L61)

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L87 ANSWER 1 OF 37 HCA COPYRIGHT 2005 ACS on STN
142:248426 Preparation method of surface-treated **fluorescent** substance for low voltage. Lee, Su Jeong; Park, Seon Yeong (Samsung SDI Co., Ltd., S. Korea). Repub. Korean Kongkae Taeho Kongbo KR 2003059429 A 20030710, No pp. given (Korean). CODEN: KRXXA7.

APPLICATION: KR 2001-88290 20011229.

AB A surface-treated **fluorescent** substance for a low voltage, its preparation method, and a **display device** obtained by using the **fluorescent** substance are provided to improve the **luminance** by treating the surface of the **fluorescent** substance with a silicate. The surface-treated **fluorescent** substance is a **fluorescent** substance with silicate adhered to its surface, wherein the silicate is **aluminum** silicate, gallium silicate, titanium silicate, thallium silicate, lanthanum silicate, or boron silicate. The content of the silicate is 0.01-10 weight% based on the amount of the **fluorescent** substance. Preferably the **fluorescent** substance is represented by **ZnS:Cu,Al** in the case of a **red light emitting fluorescent** substance, **ZnS**:Ag,Cl in the case of a blue **light emitting fluorescent** substance and Y2O2S:Eu in the case of a **red light emitting fluorescent** substance. The method comprises the steps of adding water and silicate of an alkali or alkaline earth metal to a **fluorescent** substance for a low voltage, and dispersing them by stirring; and adding a metal salt solution to the obtained solution and dispersing the solution by stirring. Preferably the silicate of an alkali or alkaline earth metal is K2SiO3.

IC ICM C09K011-59

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 49

ST surface treated **fluorescent** substance low voltage prepn method thereof

IT **Fluorescent** substances
Surface treatment
(**fluorescent** substance for low voltage surface treated with silicate)

IT Silicates, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(**fluorescent** substance for low voltage surface treated with silicate)

IT Optical imaging devices
(**fluorescent** substance for low voltage surface treated with silicate for use in)

IT **1314-98-3, Zinc sulfide,** uses
RL: TEM (Technical or engineered material use); USES (Uses)
(doped; **fluorescent** substance for low voltage surface treated with silicate)

IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
RL: TEM (Technical or engineered material use); USES (Uses)
(europium-doped; **fluorescent** substance for low voltage surface treated with silicate)

IT 1335-30-4, **Aluminum** silicate 10006-28-7 12676-29-8, Boron silicate 12789-51-4, Thallium silicate 42613-21-8, Titanium silicate 68136-20-9, Lanthanum silicate 101028-06-2, Gallium silicate

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(**fluorescent** substance for low voltage surface treated with silicate)

IT 7440-53-1, Europium, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(yttrium oxide sulfide doped with; **fluorescent** substance for low voltage surface treated with silicate)

IT **7429-90-5, Aluminum**, uses 7440-22-4, Silver, uses **7440-50-8, Copper**, uses 22537-15-1, Atomic chlorine, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(**zinc sulfide doped** with; **fluorescent** substance for low voltage surface treated with silicate)

L87 ANSWER 2 OF 37 HCA COPYRIGHT 2005 ACS on STN
142:102790 **Phosphor** of field emission **display device** and method of treating surface of the **phosphor**. Han, Si Uk; Jung, Tae Yeong; Kim, Sang Mun (Lg Electronics Inc., S. Korea). Repub. Korean Kongkae Taeho Kongbo KR 2001068581 A 20010723, No pp. given (Korean). CODEN: KRXXA7. APPLICATION: KR 2000-571 20000107.

AB A **phosphor** for a field emission **display device** and method of treating the surface of the **phosphor** are provided to prevent the degradation of the **phosphor**. A field emission **display device** includes an oxide **red phosphor** deposited on an anode to form a screen. The **phosphor** of perovskite group is coated on the surface of the **phosphor** by performing a surface conditioning process. The **phosphor** of perovskite group is MTiO3:**Pr**,X (M = Sr, Ca, Ba; X = **Al**, Ga). The **Pr** is used as 0.05 or 0.5 mol% and the X is used as 0.01 or 0.5 mol%. Also, metal alkoxides are absorbed on the surface of the **phosphor** and baked with the surface conditioning process.

IC ICM H01J009-20

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST surface treatment **phosphor** perovskite field emission **display device**

IT Field emission displays
Perovskite-type crystals
Phosphors
Surface treatment
(surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation)

IT Metal alkoxides
RL: MOA (Modifier or additive use); USES (Uses)
(surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation

with)
IT **7429-90-5, Aluminum,** uses 7440-55-3, Gallium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(alkaline earth metal titanates doped with; surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation)
IT 12047-27-7, Barium titanate (BaTiO3), uses 12049-50-2, Calcium titanate (CaTiO3) **12060-59-2, Strontium titanate (SrTiO3)**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**aluminum** and gallium **doped;** surface treatment of **phosphor** perovskites of field emission **display device** to prevent degradation)

L87 ANSWER 3 OF 37 HCA COPYRIGHT 2005 ACS on STN
141:182062 Color **cathode ray tube** showing improved white uniformity. Chikusa, Hisashi (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2004220800 A2 20040805, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-3288 20030109.
AB In a color **cathode ray tube** having a **red phosphor** layer, a **green phosphor** layer, and a blue **phosphor** layer, the **red phosphor** layer contains a specified amount of a blue **phosphor** so that the improved white uniformity can be obtained.
IC ICM H01J029-20
ICS C09K011-00; C09K011-08; H01J009-227
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST color **cathode ray tube** blue **phosphor** additive white uniformity
IT **Phosphors**
(blue-emitting; color **cathode ray tube** having blue emitting **phosphor** additive in **red phosphor** layer to improve white uniformity)
IT **Cathode ray tubes**
(color; color **cathode ray tube** having blue emitting **phosphor** additive in **red phosphor** layer to improve white uniformity)
IT **1314-98-3D, Zinc sulfide,** Ag- and **Al-doped**
RL: MOA (Modifier or additive use); USES (Uses)
(blue emitting **phosphor;** color **cathode ray tube** having blue emitting **phosphor** additive in **red phosphor** layer to improve white uniformity)
IT 12340-04-4D, Yttrium oxide sulfide (Y2O2S), Eu-doped
RL: DEV (Device component use); USES (Uses)

(**red** emitting **phosphor**; color **cathode ray tube** having blue emitting **phosphor** additive in **red phosphor** layer to improve white uniformity)

L87 ANSWER 4 OF 37 HCA COPYRIGHT 2005 ACS on STN
141:30824 **Luminophore** of **luminous** hot colors and **fluorescent display device.** Hamada, Takuya; Itakura, Kazuhiko; Shiraga, Takao; Kitagawa, Kazunori; Takanashi, Hirokazu; Toki, Hitoshi (Futaba Corporation, Japan). Fr. Demande FR 2847904 A1 20040604, 25 pp. (French). CODEN: FRXXBL. APPLICATION: FR 2003-14084 20031201. PRIORITY: JP 2002-349809 20021202.

AB A mixture of **luminophores** is provided by mixing a **luminophore** of a **luminous red** color deprived of Cd with a **luminophore** of a **luminous** color of the family of the **greens** also deprived of Cd, the **luminous** color of the mixture of **luminophores** being a hot color, i.e. **yellow** to **orange.** Also, in the mixture of **luminophores,** the component S either is removed completely or in less quantity compared to the traditional **luminophores** with **luminous** hot colors. Consequently, it does not appear a dark line or the duration at the end of which this dark line appears can be delayed, which makes it possible to have a device with **fluorescent** posting with vacuum with a bill-poster of better quality.

IC ICM C09K011-67
ICS H01J029-20; H01J001-63

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **luminophor display device; fluorescent display device luminophor; strontium titanate luminophor display device;** cadmium **zinc sulfide luminophor display device; gallium zinc oxide luminophor display device**

IT **Phosphors**
(**green**-emitting; **luminophore** of **luminous** hot colors and **fluorescent display device**)

IT Electroluminescent devices
Phosphors
(**luminophore** of **luminous** hot colors and **fluorescent display device**)

IT **Phosphors**
(**orange**-emitting; **luminophore** of **luminous** hot colors and **fluorescent display device**)

IT **Phosphors**
(**red**-emitting; **luminophore** of **luminous** hot colors and **fluorescent display device**)

IT **Phosphors**
(**yellow**-emitting; **luminophore** of **luminous** hot colors and **fluorescent display device**)
IT **7439-96-5, Manganese**, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**Mn-doped gallium zinc oxide**; **luminophore** of **luminous** hot colors and **fluorescent display device** containing)
IT **12064-18-5, Gallium zinc oxide**
ga2zno4
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**Mn**-doped **gallium zinc oxide**; **luminophore** of **luminous** hot colors and **fluorescent display device** containing)
IT **7429-90-5, Aluminum**, properties **7440-10-0**, **Praseodymium**, properties **7440-50-8**, **Copper**, properties **7440-57-5, Gold**, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**luminophore** of **luminous** hot colors and **fluorescent display device** containing)
IT **1314-98-3, Zinc monosulfide**, properties **12060-59-2, Strontium titanate**
12442-27-2, Cadmium **zinc sulfide** ((Cd,Zn)S)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**luminophore** of **luminous** hot colors and **fluorescent display device** containing)

L87 ANSWER 5 OF 37 HCA COPYRIGHT 2005 ACS on STN
140:431089 **Yellow ZnS**-based **phosphor**, process of preparing the same, and **display device** using the **phosphor**. Lee, Sanghyuk; Shin, Sanghoon; You, Yongchan; Jeong, Joayoung (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2004100185 A1 20040527, 7 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-368385 20030220. PRIORITY: KR 2002-74357 20021127.
AB A **yellow ZnS**-based **phosphor** having improved color coordinates and **luminance** for use in intermediate- and low-voltage **display devices** using improved activators and coactivators has color coordinates (x, y) shifting to a **yellow** emission as the amount of an activator is increased. Therefore, the **ZnS**: (**Au** or **Cu**), In **phosphor** can be advantageously used for various display applications including vacuum **fluorescent** displays (VFDs) and field emission displays (FEDs).
IC ICM H01J001-62
NCL 313496000; 252301400R; 252301600R

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
ST **yellow zinc sulfide phosphor**
copper gold doped display
device
IT Field emission displays
Optical imaging devices
Phosphors
(**yellow ZnS**-based **phosphor** and
process of its preparation and **display device**
based on it)
IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**yellow ZnS**-based **phosphor** and
process of its preparation and **display device**
based on it)
IT **7440-50-8, Copper**, properties **7440-57-5, Gold**, properties 7440-74-6, Indium, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**yellow ZnS**-based **phosphor** and
process of its preparation and **display device**
based on it)
IT **1314-98-3, Zinc sulfide**, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**yellow ZnS**-based **phosphor** and
process of its preparation and **display device**
based on it)
IT 1312-43-2, Indium sesquioxide 10294-68-5, Indium sulfate nonahydrate 25721-32-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(**yellow ZnS**-based **phosphor** and
process of its preparation and **display device**
based on it)

L87 ANSWER 6 OF 37 HCA COPYRIGHT 2005 ACS on STN
140:67691 An improved process for the preparation of **copper** and **aluminum** activated **zinc** cadmium **sulfide phosphors** for use in color **television** picture **tubes** as **green** component. Vasu, Kailathuvalappil Inniri; Rao, Ravilisetty Padmanabha; Jagannthan, Rangarajan (Council of Scientific & Industrial, India). Indian IN 180365 A 19980124, 16 pp. (English). CODEN: INXXAP. APPLICATION: IN 1991-DE37 19910117.
AB The invention relates to an improved process for the preparation of **copper** and **aluminum** activated **zinc** cadmium **sulfide phosphors** having the conceal formula (Zn1-x-y-z-Cdx)S:Cey,Al2 where Zn and Cd are in the preparation of 1-x-y-z:x when the value representing x ranges from 0.10% and the value of y&z ranges from 0.01-0.1% by weight which comprises mixing 99

to 90 parts by weight of **zinc sulfide** with 1 to 10 parts by weight of cadmium sulfide, adding **copper** and **aluminum** in the range of 0.01 to 0.1% by weight of the above mixture in the form of **copper** salt selected from chloride of sulfate and **aluminum** salt selected from nitrate or chloride, adding alkali halide flux such as KCl, NaF in the range of 2 to 10% by weight of the above mixture blending, the range of 900 to 1100°C, for a period of 1-2 h in the absence of oxygen.

IC ICM C22C018-00

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST TV prepn **copper aluminum zinc** cadmium **sulfide phosphor**

IT **Television tubes**
(color; improved process for preparation of **copper** and **aluminum** activated **zinc** cadmium **sulfide phosphors** for use in color **television** picture **tubes** as **green** component)

IT **Phosphors**
(improved process for preparation of **copper** and **aluminum** activated **zinc** cadmium **sulfide phosphors** for use in color **television** picture **tubes** as **green** component)

IT **7429-90-5, Aluminum,** uses **7440-50-8, Copper,** uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **phosphors** for color **television** picture **tubes**)

IT 1306-23-6, Cadmium sulfide, uses **1314-98-3, Zinc sulfide,** uses 7647-14-5, Sodium chloride, uses 7758-98-7, **Copper** sulfate, uses 13473-90-0, **Aluminum** nitrate **108915-65-7D, Copper zinc sulfide** ((**Cu,Zn**)**S**), **doped** with **Cu** and **Al**
RL: TEM (Technical or engineered material use); USES (Uses)
(**phosphors** for color **television** picture **tubes**)

L87 ANSWER 7 OF 37 HCA COPYRIGHT 2005 ACS on STN

139:187570 **Luminescence** enhancement of **ZnGa2O4**: Mn2+ by Ge4+ and Li+ doping. Kim, J. S.; Park, H. L.; Kim, G. C.; Kim, T. W.; Hwang, Y. H.; Kim, H. K.; Mho, S. I.; Han, S. D. (Institute of Physics and Applied Physics, Yonsei University, Seoul, 120-749, S. Korea). Solid State Communications, 126(9), 515-518 (English) 2003. CODEN: SSCOA4. ISSN: 0038-1098. Publisher: Elsevier Science Ltd..

AB Structural and optical properties of **ZnGa2O4**:Ge4+ and **ZnGa2O4**:Ge4+, Li+, Mn2+ **phosphors** were studied by using XRD, photoluminescence (PL) and cathodoluminescence (CL) measurements. The XRD patterns show that Ge-doped **ZnGa2O4** has a spinel phase and its lattice constant increases with respect to **ZnGa2O4**. Emission wavelength shifts from 400 to 360 nm in comparison with **ZnGa2O4** when Ge is doped in

ZnGa2O4 and a peak related with O defect was observed in Ge-doped **ZnGa2O4**. The CL **luminance** of **ZnGa2O4**:Ge4+, Li+, Mn2+ **phosphors** is seven times brighter than that of **ZnGa2O4**:Mn2+. This drastic **luminance** improvement can be attributed to Ge doping in **ZnGa2O4** acting as donor ion and Li doping resulting in increasing conductivity of **ZnGa2O4**. **ZnGa2O4**:Ge4+, Li+, Mn2+ **phosphors** hold promise for potential applications in field-emission **display devices** with high brightness operating in **green** spectral regions.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **luminescence manganese** germanium lithium **doping gallium zinc oxide**

IT Cathodoluminescence
Doping
Luminescence
X-ray diffraction
X-ray scattering
(**luminescence** enhancement of **ZnGa2O4**:Mn2+ by Ge4+ and Li+ doping)

IT Photoexcitation
(spectra; **luminescence** enhancement of **ZnGa2O4**:Mn2+ by Ge4+ and Li+ doping)

IT 7439-93-2, Lithium, properties **7439-96-5**, **Manganese**, properties 7440-56-4, Germanium, properties 16065-84-2, Germanium(4+), properties 16397-91-4, **Manganese**(2+), properties 17341-24-1, Lithium(1+), properties
RL: PRP (Properties)
(Ga2ZnO4 doped with; **luminescence** enhancement of **ZnGa2O4**:Mn2+ by Ge4+ and Li+ doping)

IT **12064-18-5, Gallium zinc oxide** (Ga2ZnO4)
RL: PRP (Properties)
(dopants effect on; **luminescence** enhancement of **ZnGa2O4**:Mn2+ by Ge4+ and Li+ doping)

L87 ANSWER 8 OF 37 HCA COPYRIGHT 2005 ACS on STN
139:171383 **Cathode-ray tube** using **phosphor** with prolonged life for projector in television.
Igarashi, Takahiro; Kusunoki, Tsuneo; Ono, Katsutoshi (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003234075 A2 20030822, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-31192 20020207.

AB The **cathode-ray tube** has a **light emission** layer made of (a) blue **light-emitting** Ag- and **Al-doped** **ZnS** particles, (b) **green light-emitting** Tb-doped Y2SiO5 particles, and/or (c) **red light-emitting** Eu-doped Y2O3 with particle diameter 5-7 μm on a **fluorescent** layer. The **phosphors** , showing prolonged life, provide the TV projector with reduced electron beam size spots without browning of the **cathode-**

ray tube walls.
IC ICM H01J031-10
ICS C09K011-08; C09K011-56; C09K011-78; C09K011-79; H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST **cathode ray tube fluorescent** layer **phosphor**; long life **phosphor**
cathode ray tube; television projector
cathode ray tube; silver
aluminum doped zinc sulfide
phosphor; terbium doped yttrium silicon oxide
phosphor; europium doped yttrium oxide **phosphor**
IT **Cathode ray tubes**
Projection apparatus
Television
(**cathode-ray tube** using electroluminescent **phosphor** with prolonged life for projector in television)
IT **Phosphors**
(electroluminescent; **cathode-ray tube** using electroluminescent **phosphor** with prolonged life for projector in television)
IT **7429-90-5, Aluminum**, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-53-1, Europium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **cathode-ray tube** using electroluminescent **phosphor** containing)
IT 1314-36-9, Yttrium oxide (Y2O3), uses
RL: TEM (Technical or engineered material use); USES (Uses)
(europium-doped; **cathode-ray tube** using electroluminescent **phosphor** with prolonged life for projector in television)
IT **1314-98-3, Zinc sulfide**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(silver- and **aluminum**-doped; **cathode-ray tube** using electroluminescent **phosphor** with prolonged life for projector in television)
IT 12027-88-2, Silicon yttrium oxide (SiY2O5)
RL: TEM (Technical or engineered material use); USES (Uses)
(terbium-doped; **cathode-ray tube** using electroluminescent **phosphor** with prolonged life for projector in television)

L87 ANSWER 9 OF 37 HCA COPYRIGHT 2005 ACS on STN
136:285971 Thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**. Kryshtab, T. G.; Khomchenko, V. S.; Papusha, V. P.; Mazin, M. O.; Tzyrkunov, Yu. A. (Department of Material Sciences, ESFM-Institute Polytechnic National, U.P.A.L.M., Mexico City, 07738, Mex.). Thin Solid Films, 403-404, 76-80 (English) 2002. CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science S.A..
AB A new technique for electro- and cathodoluminescent screen

fabrication with the application of a new method of **doping** **ZnS:Cu** and ZnO:**Cu** thin film **phosphors** is proposed. Thin films of **ZnS:Cu** were grown by electron-beam evaporation (EBE) from a **ZnS:Cu** target on substrates heated to 150-200°, and the **Cu** concentration in the target was varied from 0.06 to 0.25 weight %. BaTiO3 and sapphire single crystal substrates were used. The film thickness varied from 0.6 to 9 μm. Parameters of **ZnS:Cu** films grown by EBE were modified using non-vacuum annealing at 700-1000° in S2-rich or O2-rich atmospheric both with and without Ga co-doping. The measurement of electroluminescent (**EL**) and cathodoluminescent (CL) parameters, as well as XRD techniques and atomic force microscopy (AFM) were used for this research. The **EL ZnS:Cu**,Ga blue color emission film with a **luminance** of 30 cd/m2 and **green** (**yellow**) color emission film with a **luminance** of 800 cd/m2 were obtained. Devices with such films have a threshold voltage of 10 V The CL **luminance** was 200 cd/m2 for **ZnS:Cu**,Ga and 1100 cd/m2 for ZnO:**Cu**,Ga films at 300 K and 3700 cd/m2 for ZnO:**Cu**,Ga films at 77 K The films show a deeper **green** color than com. **phosphors**. Clarification that Ga co-doping affects the **luminance**, since Ga influences on recrystn. process, was carried out.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **copper** gallium doped **zinc** oxide **sulfide** film **phosphor**

IT Electroluminescent **devices**
(**displays**; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT Annealing
(effect of; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT **Luminescent** screens
(electroluminescent; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT Cathodoluminescence
Cathodoluminescent screens
Electron beam evaporation
Luminescence, electroluminescence
Phosphors
Surface structure
X-ray diffraction
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 7782-44-7, Oxygen, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(annealing in atmospheric rich in; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 1344-28-1, Alumina, uses
RL: NUU (Other use, unclassified); USES (Uses)

(sapphire substrate; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 12047-27-7, Barium titanate, uses
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT **7440-50-8**, **Copper**, properties 7440-55-3, Gallium, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 7704-34-9, Sulfur, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

IT 1314-13-2, Zinc oxide, properties **1314-98-3**, **Zinc sulfide**, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(thin **ZnS:Cu**,Ga and ZnO:**Cu**,Ga film **phosphors**)

L87 ANSWER 10 OF 37 HCA COPYRIGHT 2005 ACS on STN
135:233257 **Luminescent** mechanisms of **ZnS:Cu**:Cl and **ZnS:Cu:Al phosphors**.
Chen, Y. Y.; Duh, J. G.; Chiou, B. S.; Peng, C. G. (Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 30043, Taiwan). Thin Solid Films, 392(1), 50-55 (English) 2001. CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science S.A..

AB **ZnS:Cu**:Cl and **ZnS:Cu**:**Al phosphors** are fabricated by a flux fusion method to be used in **cathode ray tube** (**CRT**) monitors for **green** emission. The emission spectra of the **phosphors** depend on the **Cu** concentration **Luminescence** measurements were conducted, and several models are applied to explain the **luminescent** phenomenon of these **phosphors**. **ZnS:Cu**:Cl and the **ZnS:Cu:Al phosphors** exhibit **green** emission yet their **luminescence** mechanisms are different. The emission spectrum from the as-fabricated **green phosphors** is not a typical Gaussian distribution. The combination of blue and **green** band **luminescence** is attributed to the **green**-**luminescence** quenching derived from the interstitial **Cu**+ ions.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74

ST **zinc sulfide phosphor copper aluminum** chlorine cathodoluminescence quenching EPR;

cathode ray tube phosphor
zinc sulfide copper aluminum
chlorine
IT Cathodoluminescence
ESR (electron spin resonance)
Interstitials
Luminescence quenching
Phosphors
(**luminescent** mechanisms of **ZnS:Cu**
:Cl and **ZnS:Cu:Al phosphors**
)
IT **1314-98-3, Zinc sulfide**, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**doped** with **copper** and either
aluminum or chlorine; **luminescent** mechanisms of
ZnS:Cu:Cl and **ZnS:Cu:**
Al phosphors)
IT **7440-50-8, Copper**, properties 17493-86-6,
Copper(1+), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**zinc sulfide** containing **aluminum** or
chlorine and; **luminescent** mechanisms of **ZnS:**
Cu:Cl and **ZnS:Cu:Al**
phosphors)
IT **7429-90-5, Aluminum**, properties 7782-50-5,
Chlorine, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**zinc sulfide** containing **copper** and;
luminescent mechanisms of **ZnS:Cu**:Cl
and **ZnS:Cu:Al phosphors**)

L87 ANSWER 11 OF 37 HCA COPYRIGHT 2005 ACS on STN
132:56896 **Fluorescent light-emitting** (
display) **device** using indium titanium oxide.
Nomura, Hiroshi; Namikawa, Mamoru; Naito, Yasuyuki (Futaba Denshi Kogyo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11354046 A2 19991224 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-159227 19980608.
AB The device has a transparent substrate, an amorphous ITO film as an anode formed on the inner surface of the substrate, and a **fluorescent** material layer on the anode and the ITO film thickness is fixed so that the peaks of spectroscopic transmission of the ITO film and the peaks of emission spectrum of the **fluorescent** material are substantially the same. Alternatively, the color **display device** has a **red light-emitting fluorescent** material layer associated with a 1500-Å bottom amorphous ITO layer, a blue **light-emitting** layer with a 1000-Å bottom amorphous ITO layer, and a **green light-emitting** layer associated with a 1250-Å bottom amorphous ITO layer.
IC ICM H01J029-18
ICS C09K011-54; C09K011-62; C09K011-67; C09K011-79; H01J029-20;

H01J029-32; H01J031-12
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
ST **fluorescent light emitting** color **display device**; amorphous ITO anode film thickness display
IT Electrodeposits
(anodic; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT **Fluorescent** substances
(**fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT Electrooptical imaging devices
(**fluorescent**; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT 12027-88-2, Silicon yttrium oxide (SiY2O5)
RL: DEV (Device component use); USES (Uses)
(cesium-doped; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT 50926-11-9, ITO
RL: DEV (Device component use); USES (Uses)
(**fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT **7439-96-5, Manganese**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**gallium zinc oxide doped** with; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT **12064-18-5, Zinc gallium oxide (ZnGa2O4)**
RL: DEV (Device component use); USES (Uses)
(**manganese-doped**; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT **12060-59-2**, Strontium titanium oxide (**SrTiO3**)
RL: DEV (Device component use); USES (Uses)
(**praseodymium-doped**; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide anode layer with specified thickness)
IT **7440-10-0, Praseodymium**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**strontium titanium oxide** doped with; **fluorescent light-emitting** (**display**) **device** with amorphous indium tin oxide

anode layer with specified thickness)
IT 7440-46-2, Cesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(yttrium silicon oxide doped with; **fluorescent light-emitting (display) device** with amorphous indium tin oxide anode layer with specified thickness)
IT 7440-66-6, Zinc, uses
RL: MOA (Modifier or additive use); USES (Uses)
(zinc oxide doped with; **fluorescent light-emitting (display) device** with amorphous indium tin oxide anode layer with specified thickness)
IT 1314-13-2, Zinc oxide, uses
RL: DEV (Device component use); USES (Uses)
(zinc-doped; **fluorescent light-emitting (display) device** with amorphous indium tin oxide anode layer with specified thickness)

L87 ANSWER 12 OF 37 HCA COPYRIGHT 2005 ACS on STN
130:73619 **Phosphor** compositions including bismuth vanadate pigments and color **television screens** with coatings including them. Bredol, Michael; Mingers, Andrea (Philips Patentverwaltung G.m.b.H., Germany). Ger. DE 19733584 C1 19981210, 6 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1997-19733584 19970802.
AB **Phosphor** compns. are described which include a **green**-emitting **phosphor** and a $BiVO_4$ pigment. Color **television screens** with coatings including the compns. are also described. The **television screen** coating may also include V_2O_5. The pigment may be present as a coating on the **phosphor** particles.
IC ICM H01J029-20
ICS C09K011-08; C09K011-69; C09K011-74
ICA H01J031-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
ST bismuth vanadate pigment **phosphor** coating compn; color television **phosphor** coating compn
IT **Phosphors**
(**green**-emitting; **phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)
IT Cathodoluminescent screens
(**phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)
IT **1314-98-3, Zinc sulfide,** uses
RL: DEV (Device component use); USES (Uses)
(**green**-emitting **phosphors** based on; **phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)

IT 1314-62-1, Vanadium pentoxide, uses
RL: DEV (Device component use); USES (Uses)
(**phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)
IT 14059-33-7P, Bismuth vanadate (BiVO4)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)
IT 5588-84-1, Vanadyl triisopropoxide 7787-60-2, Bismuth trichloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(**phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)
IT **7429-90-5, Aluminum**, uses **7440-50-8, Copper**, uses **7440-57-5, Gold**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**zinc sulfide doped** with; **phosphor** compns. including bismuth vanadate pigments and color **television screens** with coatings including them)

L87 ANSWER 13 OF 37 HCA COPYRIGHT 2005 ACS on STN
130:8940 Color **cathode-ray tube**. Kato, Hiroshi; Tsuchiya, Masami (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10283946 A2 19981023 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-92449 19970410.
AB The color **cathode-ray tube** uses a **green phosphor** made from **Mn**-doped Zn2SiO4 and **Cu**- and **Al-doped ZnS** containing rare earth elements. The **phosphor** exhibited excellent brightness saturation characteristic.
IC ICM H01J029-20
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
ST color **cathode ray tube phosphor**
IT **Cathode ray tubes**
Phosphors
(**green phosphor** for color **cathode-ray tube**)
IT **1314-98-3, Zinc sulfide**, uses
13597-65-4, Zinc silicate (Zn2SiO4)
RL: DEV (Device component use); USES (Uses)
(**green phosphor** for color **cathode-ray tube**)
IT **7429-90-5, Aluminum**, uses **7439-96-5, Manganese**, uses **7440-50-8, Copper**, uses
RL: MOA (Modifier or additive use); USES (Uses)

(**green phosphor** for color **cathode-ray tube**)

L87 ANSWER 14 OF 37 HCA COPYRIGHT 2005 ACS on STN
127:154418 Manufacture of **green**-emitting **phosphor** for excitation by low-speed electron beam. Oshima, Hidenori (Noritake Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09194834 A2 19970729 Heisei, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-6397 19960118.

AB The manufacturing method involves a process of dispersing a **Mn** compound activator into ZnO·Ga2O3 in a reducing atmospheric at 800-1000°. The obtained **phosphor** may be annealed in an inactive atmospheric at 650-950° after the above process. The **phosphor** is useful for **fluorescent** display tubes. The **phosphor** shows high **luminance** at its initial emitting.

IC ICM C09K011-62
ICS C09K011-08

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **zinc gallium oxide manganese** activator **phosphor**; thermal **redn** zinc gallium oxide **phosphor**; **green** emitting zinc gallium oxide **phosphor**

IT **Cathode ray tubes**
Phosphors
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

IT Reduction
(thermal; **doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

IT **7439-96-5, Manganese**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

IT **12064-18-5P, Gallium zinc oxide** (Ga2ZnO4)
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

IT 7785-87-7, **Manganese** sulfate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**doping** of **manganese** into **gallium zinc oxide phosphor** by thermal **reduction** for high initial **luminance**)

L87 ANSWER 15 OF 37 HCA COPYRIGHT 2005 ACS on STN
124:328027 **Green**-emitting **phosphor** mixture. Park, Chang-won; Yang, Jun-mo; Lee, Joon-bae (Samsung Display Devices Co., Ltd., S. Korea). Ger. Offen. DE 19517165 A1 19960418, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1995-19517165 19950510. PRIORITY: KR 1994-26118 19941012.

AB **Green**-emitting **phosphor** mixts. comprise InBO3:Tb with **ZnS:Cu,Au,Al** or **ZnS:Cu,Al**. The mixture may optionally also include Zn2SiO4:**Mn**. **Cathode-ray tubes** employing the mixts. are also described.

IC ICM H01J029-20
ICS H01J031-20; C09K011-08

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74

ST **cathode ray tube green phosphor** mixt; indium borate **zinc sulfide phosphor** mixt

IT **Phosphors**
(**green**-emitting, **green**-emitting **phosphor** mixts. for **cathode-ray tubes**)

IT **7439-96-5, Manganese**, uses 7440-27-9, Terbium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(activator; **green**-emitting **phosphor** mixts. for **cathode-ray tubes**)

IT **1314-98-3, Zinc sulfide**, uses
RL: DEV (Device component use); USES (Uses)
(**green**-emitting **phosphor** mixts. for **cathode-ray tubes**)

IT 13709-93-8, Indium borate (InBO3)
RL: DEV (Device component use); USES (Uses)
(terbium-activated; **green**-emitting **phosphor** mixts. for **cathode-ray tubes**)

IT **7429-90-5, Aluminum**, uses **7440-50-8, Copper**, uses **7440-57-5, Gold**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**zinc sulfide doped** with; **green**-emitting **phosphor** mixts. for **cathode-ray tubes**)

L87 ANSWER 16 OF 37 HCA COPYRIGHT 2005 ACS on STN
122:20060 Color **cathode-ray tubes**. Onodera, Makoto; Takahashi, Yoshinori; Wakatsuki, Tadashi; Oikawa, Mitsuhiro (Tokyo Shibaura Electric Co, Japan). Jpn. Kokai Tokkyo Koho JP 06103915 A2 19940415 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-239869 19910919.

AB The **phosphor** screens of the tubes contain **green**, **red**, and blue **phosphor** pixel layers; the

green phosphor comprises **Cu**-activated **ZnS** particles coated with a blue pigment containing TiO2, CoO, Al2O3 and Li2O.

IC ICM H01J029-20
ICS C09K011-08; C09K011-56; H01J029-18

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST color **CRT** pigment coated **phosphor** particle; **zinc sulfide phosphor** blue pigment **CRT**; oxide pigment **zinc sulfide phosphor**

IT **Phosphors**
(**green**-emitting, blue pigment-coated **green**-emitting **CRT phosphors**)

IT 1307-96-6, Cobalt oxide (CoO), uses 1344-28-1, **Aluminum** oxide (Al2O3), uses 12057-24-8, Lithium oxide (Li2O), uses 13463-67-7, Titanium oxide (TiO2), uses 159704-07-1, Daipyroxide Sky Blue 9418
RL: DEV (Device component use); USES (Uses)
(blue pigment-coated **green**-emitting **CRT phosphors**)

IT **1314-98-3, Zinc sulfide,** uses
RL: DEV (Device component use); USES (Uses)
(**copper-doped**; blue pigment-coated **green**-emitting **CRT phosphors**)

IT **7440-50-8, Copper,** uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(dopant; blue pigment-coated **green**-emitting **CRT phosphors**)

L87 ANSWER 17 OF 37 HCA COPYRIGHT 2005 ACS on STN
121:94937 Emission color tuning of **green** emitting **ZnS**-based **CRT phosphors**. Bredol, M.; Merikhi, J.; Koehler, I.; Bechtel, H.; Czarnojan, W. (Philips Forschungslaboratorien/Aachen, Aachen, D-52021, Germany). Journal of Solid State Chemistry, 110(2), 250-5 (English) 1994. CODEN: JSSCBI. ISSN: 0022-4596.

AB **ZnS:Cu,Au,Al**; **ZnS:Cu,Al** and (**Zn**,Cd)**S:Cu,Al** are the most important **green** emitting **phosphors** for **cathode ray tube** applications. The latter one contains (toxic) cadmium and therefore tends to be eliminated from tube production whenever possible. Alloying with CdS is applied to control the emission color over a very large range. This work shows how the emission color of the Cd-free **phosphors** can be tuned as well, at least over the region of interest for the **green** primary of color TV. Tuning mechanisms control the stoichiometry in the case of **ZnS:Cu,Au,Al** and proper adjustment of the doping levels in the case of **ZnS:Cu,Al**. Relations for the emission color are given; possible microscopic mechanisms are discussed.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST emission color tuning **zinc sulfide phosphor**
IT **Luminescence**
(of **zinc sulfide doped** with **aluminum** and **copper** and **gold**)
IT **Phosphors**
(**zinc sulfide**-based, emission color tuning of **green** emitting)
IT **1314-98-3, Zinc sulfide**, uses
RL: USES (Uses)
(**phosphors** based on, emission color tuning of **green** emitting)
IT **7429-90-5, Aluminum**, uses **7440-50-8, Copper**, uses **7440-57-5, Gold**, uses
RL: USES (Uses)
(**phosphors** from **zinc sulfide doped** with, emission color tuning of **green** emitting)

L87 ANSWER 18 OF 37 HCA COPYRIGHT 2005 ACS on STN
120:204086 **Green**-emitting cathodoluminescent **phosphor** composition. Shirakawa, Yasuhiro; Takahara, Takeshi; Morikawa, Hiromi (Tokyo Shibaura Electric Co, Japan; Toshiba Electronic Eng). Jpn. Kokai Tokkyo Koho JP 05171142 A2 19930709 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-340912 19911224.
AB The composition comprises a **Cu**(40-200 ppm)-**doped ZnS phosphor** (95-99.995%) and a surface-bonded pale-blue pigment blend (0.005-5%) containing a Pr2O3 and a TiO2-CoO-Al2O3-Li2O powder. The pigment-coated **phosphor**, emitting a color-rendering **green** light, is suited for use on high-definition **cathode-ray tubes**.
IC ICM C09K011-56
ICS C09K011-08
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST cathodoluminescent pigment coated **phosphor green** emitting
IT **Phosphors**
(**green**-emitting, cathodoluminescent **copper-doped zinc sulfide**, with surface-bonded pigments)
IT **7440-50-8, Copper**, uses
RL: USES (Uses)
(dopants, in **green**-emitting cathodoluminescent **zinc sulfide phosphors**, with surface-bonded pigments)
IT **1314-98-3, Zinc sulfide (ZnS)**, uses
RL: USES (Uses)
(**doped** with **copper**, **green**-emitting cathodoluminescent **phosphors** from, with surface-bonded

pigments)
IT 12036-32-7, **Praseodymium** oxide (Pr2O3) 153835-37-1, **Aluminum** cobalt lithium titanium oxide
RL: PRP (Properties)
(pale-blue pigments from, surface-bonded to cathodoluminescent **copper-doped zinc sulfide phosphors**)

L87 ANSWER 19 OF 37 HCA COPYRIGHT 2005 ACS on STN
118:157399 **Green**-emitting pigment-coated **phosphor**. Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04202493 A2 19920723 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-335639 19901130.
AB The **phosphor** comprises a **Cu-doped ZnS phosphor** 98 .apprx. 99.95% and a cerulean-blue pigment (essentially cobaltous stannate) 0.05 .apprx. 2% which is coated on or bonded to the **phosphor** particles, wherein the **Cu** content per 1 g of the **phosphor** is 4 + 10-5 .apprx. 2 + 10-4 g. The **phosphor**, emitting a stable **luminous green**, is suited for use in color **cathode-ray tubes**.
IC ICM C09K011-08
ICS C09K011-56; H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **green** emitting blue pigment bonded **phosphor**
IT **Phosphors**
(**green**-emitting, **copper-doped zinc sulfide**, coated with blue pigments, for color **cathode-ray tubes**)
IT **1314-98-3, Zinc sulfide** (**ZnS**), uses
RL: USES (Uses)
(**copper-doped phosphors** from, **green**-emitting, blue-pigment bonded, for color **cathode-ray tubes**)
IT **7440-50-8, Copper**, uses
RL: USES (Uses)
(**dopants**, in **green**-emitting **zinc sulfide phosphors**, for color **cathode-ray tubes**)
IT 83712-59-8, Cerulean blue
RL: PRP (Properties)
(light blue pigments, coated on **green**-emitting **phosphors**, for color **cathode-ray tubes**)

L87 ANSWER 20 OF 37 HCA COPYRIGHT 2005 ACS on STN
118:69299 Defect chemistry and **luminescence** of **aluminum-, gold-**, and **copper-doped zinc sulfide**. Bredol, M.; Merikhi, J.; Ronda, C. (Forschungslab., Philips GmbH, Aachen,

D-5100, Germany). Berichte der Bunsen-Gesellschaft, 96(11), 1770-4 (English) 1992. CODEN: BBPCAX. ISSN: 0005-9021.

AB Present high quality **CRT** TV sets employ wurtzite-(**Zn**,Cd)**S:Cu,Al phosphor** or its Cd-free variant sphalerite-**ZnS:Cu, Au,Al** to generate the **green** primary color. If prepared properly, both **phosphors** exhibit the desired emission properties. However, the **Au**-codoped material tends to large variations of the emission as a function of the preparation procedure and thus is more demanding in terms of precise control of the manufacturing process. This work aims at a better understanding of these peculiarities. Expts. are presented which demonstrate the large influence of the defect chemical of the **ZnS**-host on the **Au**-related emission, whereas the **Cu**-related emission is affected to a lesser extent. Possible techniques for a fine-tuning of the emission spectrum are discussed and evaluated according to the requirements of screen manufacture

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST doped **zinc sulfide** defect chem **luminescence; aluminum zinc sulfide** defect chem **luminescence; gold zinc sulfide** defect chem **luminescence; copper zinc sulfide** defect chem **luminescence**

IT **Phosphors**
(**aluminum-copper-gold-doped zinc sulfide**)

IT **Luminescence**
(of **aluminum-copper-gold-doped zinc sulfide**)

IT **1314-98-3, Zinc sulfide,** properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **aluminum-copper-gold**-doped)

IT **7429-90-5, Aluminum,** properties **7440-50-8, Copper,** properties **7440-57-5, Gold,** properties
RL: PRP (Properties)
(defect chemical and **luminescence** of **zinc sulfide** cool-doped with)

L87 ANSWER 21 OF 37 HCA COPYRIGHT 2005 ACS on STN

117:242894 **Green light-emitting zinc sulfide phosphor** containing pigment. Oya, Yasumasa; Takahara, Takeshi; Oikawa, Mitsuhiro (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04183779 A2 19920630 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-313414 19901119.

AB The title material comprises **Cu-doped ZnS phosphor,** on the surface of which ultramarine pigment based on S-containing **Al** silicate complex is fixed.

Optionally a blue pigment is further fixed on the **phosphor**. The material is useful for color **cathode-ray tube** in **display**, etc.

IC ICM C09K011-08
ICS C09K011-56; H01J029-20

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

ST **green light emitting phosphor** pigment; **copper doped zinc sulfide phosphor**; sulfur **aluminum** silicate pigment **phosphor**; color **cathode ray tube phosphor**; ultramarine pigment **phosphor**

IT **Phosphors**
(**copper-doped zinc sulfide**, ultramarine pigment-fixed, for **green light-emitting cathode ray tube**)

IT **Phosphors**
(**green**-emitting, ultramarine pigment-fixed **copper-doped zinc sulfide**, for **cathode-ray tubes**)

IT 7704-34-9, Sulfur, uses
RL: USES (Uses)
(**aluminum** silicate complex-based pigment containing, for **copper-doped zinc sulfide phosphor**, for **green light-emitting cathode-ray tube**)

IT **1314-98-3, Zinc sulfide**, uses
RL: USES (Uses)
(**copper-doped, phosphors**, ultramarine pigment-fixed, for **green light-emitting cathode-ray tube**)

IT **7440-50-8, Copper**, uses
RL: USES (Uses)
(**zinc sulfide phosphor doped** with, having ultramarine pigment, for **green light-emitting cathode-ray tube**)

L87 ANSWER 22 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:242893 **Green light-emitting zinc sulfide phosphor** containing pigment. Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04183778 A2 19920630 Heisei, 7 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1990-313413 19901119.

AB The title material comprises **Cu-doped ZnS phosphor**, on the surface of which pale blue pigment based on TiO2-CoO-Al2O3-Li2O is fixed. Optionally a blue pigment is further fixed on the **phosphor**. The material is useful for color **cathode-ray tube** in **display**, etc.

IC ICM C09K011-08
ICS C09K011-56; H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST **green light emitting phosphor** pigment; **copper doped zinc sulfide phosphor**; titanium oxide blend pigment **phosphor**; cobalt oxide blend pigment **phosphor**; **aluminum** oxide blend pigment **phosphor**; lithium oxide blend pigment **phosphor**; color **cathode ray tube phosphor**
IT **Phosphors**
(**copper-doped zinc sulfide**, pigment-fixed, for **green light-emitting cathode ray tube**)
IT **Phosphors**
(**green**-emitting, pigment-fixed **copper-doped zinc sulfide**, for **cathode-ray tubes**)
IT **1314-98-3, Zinc sulfide**, uses
RL: USES (Uses)
(**copper-doped, phosphors**, pigment-fixed, for **green light-emitting cathode-ray tube**)
IT 1307-96-6, Cobalt oxide (CoO), uses 1344-28-1, **Aluminum** oxide, uses 12057-24-8, Lithium oxide, uses 13463-67-7, Titanium oxide, uses
RL: USES (Uses)
(pigment containing, for **copper-doped zinc sulfide phosphor**, for **green light-emitting cathode -ray tube**)
IT **7440-50-8, Copper**, uses
RL: USES (Uses)
(**zinc sulfide phosphor doped** with, having pigment, for **green light-emitting cathode-ray tube**)

L87 ANSWER 23 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:242892 **Green light-emitting zinc sulfide phosphor** containing pigment. Takahara, Takeshi; Oikawa, Mitsuhiro; Oya, Yasumasa (Toshiba Corp., Japan; Toshiba Electronic Engineering Corp.). Jpn. Kokai Tokkyo Koho JP 04183777 A2 19920630 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-313412 19901119.
AB The title material comprises **Cu-doped ZnS phosphor**, on the surface of which CoAl2O4-based cobalt blue pigment is fixed. Optionally a blue pigment is further fixed on the **phosphor**. The material is useful for color **cathode-ray tube** in **display**, etc.

IC ICM C09K011-08
ICS C09K011-56; H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST **green light emitting phosphor** pigment; **copper doped zinc sulfide phosphor**; cobalt aluminate based pigment **phosphor**; color **cathode ray tube phosphor**
IT **Phosphors**
(**copper-doped zinc sulfide**, cobalt aluminate pigment-fixed, for **green light-emitting cathode ray tube**)
IT **Phosphors**
(**green**-emitting, cobalt aluminate pigment-fixed **copper-doped zinc sulfide**, for **cathode-ray tubes**)
IT **1314-98-3, Zinc sulfide**, uses
RL: USES (Uses)
(**copper-doped, phosphors**, cobalt aluminate pigment-fixed, for **green light-emitting cathode-ray tube**)
IT 1333-88-6, Cobalt aluminate (CoAl2O4)
RL: USES (Uses)
(pigment containing, for **copper-doped zinc sulfide phosphor**, for **green light-emitting cathode -ray tube**)
IT **7440-50-8, Copper**, uses
RL: USES (Uses)
(**zinc sulfide phosphor doped** with, having cobalt aluminate pigment, for **green light-emitting cathode -ray tube**)

L87 ANSWER 24 OF 37 HCA COPYRIGHT 2005 ACS on STN
117:36228 Fabrication of color **luminescent screen** of **cathode-ray tube**. Watanabe, Hirotoshi; Nishimura, Yutaka; Matsuo, Koji; Aikawa, Noboru; Tsukamoto, Katsuhide (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03252466 A2 19911111 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-49743 19900301.
AB A shadow-mask color **CRT** screen is formed by offset printings of graphite, **red-green**-blue **phosphor** and metal-back lines, wherein the graphite ink contains a vehicle containing a depolymn.-type organic binder and a metalorg. compound; and the **phosphor** ink contains another depolymn.-type organic binder. The compns. and the fabrication processes are also claimed. The screen is suited for use in color TV's.
IC ICM C09D011-00

ICS B41F017-36; C09D011-02; C09D011-10; H01J009-227
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST color **CRT luminescent** screen offset printing
IT **Cathode-ray tubes**
(color **luminescent** screen for, manufacture of)
IT Optical materials
(graphite and **phosphor** inks, for offset printings of color **CRT luminescent** screen)
IT Inks
(lithog., for color-**CRT luminescent** screen)
IT **1314-98-3, Zinc sulfide (ZnS)**,
uses
RL: USES (Uses)
(**copper/aluminum-doped, green**-emitting **phosphor** from, for color-**CRT luminescent** screen)
IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
RL: USES (Uses)
(europium-doped, **red**-emitting **phosphor** from, for color-**CRT luminescent** screen)
IT 124-07-2D, Octylic acid, silicon derivative 50601-94-0 138322-55-1
RL: USES (Uses)
(graphite ink containing, for offset-printing of color-**CRT luminescent** screen)
IT **1314-98-3, Zinc sulfide (ZnS)**,
uses
RL: USES (Uses)
(silver-doped, blue-emitting **phosphor** from, for color-**CRT luminescent** screen)

L87 ANSWER 25 OF 37 HCA COPYRIGHT 2005 ACS on STN
113:240961 Application studies on **red-light emitting zinc sulfide**-cadmium sulfide and europium-activated yttrium oxide sulfide (Y2O2S:Eu3+) **phosphors** used in **cathode-ray tube screens** for **television.**
Abdel-Kader, A.; Elkholy, M. M. (Fac. Sci., Menoufia Univ., Menoufia, Egypt). Journal of Materials Science: Materials in Electronics, 1(2), 95-9 (English) 1990. CODEN: JSMEEV. ISSN: 0957-4522.
AB The (Zn0.27Cd0.73)S:Ag,Cl, (Zn0.77Cd0.23)S:**Cu**,Cl and Y2O2S:Eu3+ **red-light emitting phosphors** were used in the preparation of **cathode-ray tube screens** for **television**. The dependence of screen brightness on both electron-beam accelerating voltage and current densities was studied. The theor. calculated intrinsic efficiencies were compared with the exptl. efficiencies. The chromaticity of the **cathode-ray tube screens** was also studied as a function of accelerating high tension and c.d. Cathodoluminescence emission spectra for these **phosphors** at room temperature are also measured.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **cathode tube screen red** emitting **phosphor**; cadmium **zinc sulfide** **phosphor** television; yttrium oxysulfide europium **phosphor** television
IT **Phosphors**
(cadmium **zinc sulfide** and yttrium oxysulfide)
IT **Luminescence**, cathodo-
(of europium-doped yttrium oxysulfide and **copper**- and silver-**doped** cadmium **zinc sulfide**)
IT **Phosphors**
(cathodoluminescent, from cadmium **zinc sulfide** and yttrium oxysulfide)
IT 126668-33-5, Cadmium **zinc sulfide** (Cd0.23Zn0.77S) 126668-34-6, Cadmium **zinc sulfide** (Cd0.73Zn0.27S)
RL: PRP (Properties)
(cathodoluminescent **phosphors** containing, for **cathode ray tubes**)
IT 7440-22-4, Silver, uses and miscellaneous **7440-50-8**, **Copper**, uses and miscellaneous 7782-50-5, Chlorine, uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from cadmium **zinc sulfide** doped with, for **cathode ray tubes**)
IT 12340-04-4, Yttriumoxy sulfide (Y2O2S)
RL: PRP (Properties)
(cathodoluminescent **phosphors** from europium-containing, for **cathode ray tube screens**)
IT 22541-18-0, Europium(3+), uses and miscellaneous
RL: USES (Uses)
(cathodoluminescent **phosphors** from yttrium oxysulfide containing, for **cathode-ray tube screens**)

L87 ANSWER 26 OF 37 HCA COPYRIGHT 2005 ACS on STN
113:181593 Electroluminesent light panel for liquid-crystal display. Mori, Naoyuki (NEC Kansai, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02142090 A2 19900531 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-295268 19881122.
AB An electroluminescent light panel for a white-mode liquid-crystal display comprises a **luminescent** layer containing a dispersion of a **ZnS:Cu phosphor** powder and a **red fluorescent** pigment, wherein the **phosphor** contains 0.05-0.15 weight% **Cu** and the pigment is present in an amount of 7-10 weight%.
IC ICM H05B033-14
ICS C09K011-56
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 75

IT **1314-98-3, Zinc sulfide**, uses and miscellaneous
RL: USES (Uses)
(**phosphor**, doped with **copper**, for electroluminescent light panels for liquid-crystal **display devices**)
IT **7440-50-8, Copper**, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide phosphor doped** with, for electroluminescent light panels for liquid-crystal **display devices**)

L87 ANSWER 27 OF 37 HCA COPYRIGHT 2005 ACS on STN
112:148706 Electroluminescent display panel. Matsuoka, Isahiro; Toyama, Hitoshi; Suzuki, Isamu (Nichia Kagaku Kogyo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 01243392 A2 19890928 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-71202 19880324.
AB A **yellow-green** or **yellow** electroluminescent **display device**, suited for use as a back-lighting for a liquid-crystal display, comprises a **luminescent** layer consisting of Eu-activated **ZnS phosphor** particles and dye particles dispersed in a binder.
IC ICM H05B033-14
ICS C09K011-00; H05B033-18
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
ST electroluminescent panel **zinc sulfide phosphor**
IT Electroluminescent devices
(**copper-doped zinc sulfide** and dyes for)
IT **7440-50-8, Copper**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** activated by, for electroluminescent panels)
IT **1314-98-3, Zinc sulfide**, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, activated by **copper** for electroluminescent panels)

L87 ANSWER 28 OF 37 HCA COPYRIGHT 2005 ACS on STN
107:145008 **Luminescent screen** for **cathode-ray tubes**. Watanabe, Hisamitsu (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62072780 A2 19870403 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-212437 19850927.
AB The **light**-blue-**emitting** screen employs a mixture of **ZnS** activated with Ag and **ZnS** activated with **Au** and **Al**. The product is useful for color displays. **Phosphors** containing Ag-**doped ZnS** (blue) 73, **Au** and **Al-doped ZnS** (**yellow**) 21, and Eu-doped Y2O2S (**red**) 6% were prepared

IC ICM C09K011-08
ICS H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST color display screen **zinc sulfide; gold aluminum zinc sulfide phosphor**
IT **Luminescent** screens
(cathodo-, **phosphor** mixts. for)
IT 7440-53-1, Europium, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on yttrium oxysulfide activated with, for **luminescent** screens)
IT **7440-57-5, Gold**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated with **aluminum** and, for **luminescent** screens)
IT **7429-90-5, Aluminum**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated with **gold** and, for **luminescent** screens)
IT 7440-22-4, Silver, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated with, for **luminescent** screens)
IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
RL: USES (Uses)
(**phosphors** based on, activated with europium, for **luminescent** screens)
IT **1314-98-3, Zinc sulfide**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on, for **luminescent** screens)

L87 ANSWER 29 OF 37 HCA COPYRIGHT 2005 ACS on STN
104:159763 **Phosphors** for color **cathode-ray tubes**. Koike, Norio; Ito, Takeo; Kawamata, Takamitsu; Sugano, Satoshi (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60221482 A2 19851106 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-77590 19840419.
AB The cathodoluminescent **screen** for a **cathode-ray tube** contains a **green**-emitting **phosphor** doped with a strong magnetic metal 0.1-500 ppm and a **red**-emitting **phosphor** doped with a rare earth metal 15-60 ppm. The above screen may contain Ag- and Cl-**doped ZnS** blue-emitting **phosphor**, **Cu**- and **Al-doped ZnS** **green**-emitting **phosphor doped** with Ni 3 ppm, and Eu-doped Y2O2S **red**-emitting **phosphor** doped with Tb 30 ppm.
IC ICM C09K011-08

ICS H01J029-20
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **phosphor cathode ray tube**
IT **Phosphors**
(**red**-emitting, dopants for)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**cathode-ray tubes** with **phosphors** containing)
IT 7440-02-0, uses and miscellaneous
RL: USES (Uses)
(**copper**- and **aluminum-doped zinc sulfide green**-emitting **phosphor doped** with)
IT 7440-48-4, uses and miscellaneous
RL: USES (Uses)
(**copper**- and **gold**- and **aluminum-doped zinc sulfide green** -emitting **phosphor doped** with)
IT **7429-90-5**, uses and miscellaneous **7440-57-5**, uses and miscellaneous
RL: USES (Uses)
(**green**-emitting **phosphor** containing **zinc sulfide** doped with)
IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**green**-emitting **phosphor** containing **zinc -sulfide** doped with)
IT 1314-36-9, uses and miscellaneous 12340-04-4
RL: USES (Uses)
(**red**-emitting **phosphors** containing)
IT 7440-52-0, uses and miscellaneous
RL: USES (Uses)
(**red**-emitting **phosphors** containing yttrium oxide doped with)
IT 7440-27-9, uses and miscellaneous 7440-53-1, uses and miscellaneous
RL: USES (Uses)
(**red**-emitting **phosphors** containing yttrium oxide sulfide doped with)

L87 ANSWER 30 OF 37 HCA COPYRIGHT 2005 ACS on STN
104:139432 **Cathode-ray tube screen**
. Ito, Takeo; Koike, Norio; Tamaya, Masaaki; Kawamata, Takamitsu (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60156787 A2 19850816 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-11876 19840127.
AB Portions of a **cathode-ray tube screen** are coated with a **phosphor** containing 0.5-5 ppm Ni, which **emits green light** and is selected from **Cu**-, **Au**-, and **Cu-Au**-activated **ZnS** and **Cu**-activated (Cd,

Zn)S, to reduce **fluorescence** induced by low-energy scattered electrons. Contrasts, i.e., ratios of **luminescence** of a white bar to the brightness of the dark background in a color picture tube screen, were 10-30% higher than those without Ni doping, and visual reflectivity under a **fluorescent** lamp was decreased from that without Ni doping.

IC ICM C09K011-56
ICS H01J029-20

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 76

ST **luminescent** screen **zinc sulfide phosphor; cathode ray tube screen;** nickel doped **zinc sulfide phosphor; copper** activated **zinc sulfide phosphor; gold** activated **zinc sulfide phosphor;** cadmium **zinc sulfide phosphor**

IT **Luminescent** screens
(**zinc sulfide phosphors** for, doped with nickel)

IT **Phosphors**
(**zinc sulfide,** doped with nickel)

IT 1306-23-6D, solid solns. with **zinc sulfide** **1314-98-3,** uses and miscellaneous **1314-98-3D,** solid solns. with cadmium sulfide
RL: USES (Uses)
(**phosphors,** nickel-doped, for **cathode-ray tube screens**)

IT **7440-50-8,** uses and miscellaneous **7440-57-5,** uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide phosphors doped** with nickel and activated with, for **cathode-ray tube screens**)

IT 7440-02-0, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide phosphors** doped with, for **cathode-ray tube screens**)

L87 ANSWER 31 OF 37 HCA COPYRIGHT 2005 ACS on STN
104:99169 Monochrome **cathode-ray tubes.**
Morita, Yasukazu (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60177091 A2 19850911 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1984-32301 19840224.

AB Title tubes possess a **luminescent** layer prepared by coating a mixture of a **ZnS**-type **phosphor** and an **orange-luminescent phosphor,** such as CaS:**Mn** or CaMgS:**Mn,** and show a **yellow-green** to **greenish yellow** or white **luminescence.** The tubes show high **luminosity** and short afterglow; hence they are useful for displays. Thus, the

inner wall of a bulb was precipitation-coated with a layer of a CaMgS:**Mn/ZnS**:AuAl (30:70) mixed **phosphor** to obtain a monochrome **cathode-ray tube**, which showed a 10-20% higher **luminosity** than a tube prepared with a conventional Y2O2S:Eu/**ZnS**:AuAl **phosphor**.

IC ICM C09K011-08
ICS H01J029-20; H01J031-10

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

ST monochrome **cathode ray tube** **phosphor**; calcium sulfide **manganese** **phosphor** display; magnesium calcium sulfide **phosphor** display; **luminescence yellow green** **phosphor** display; white **luminescence** **cathode ray tube**; **zinc** **sulfide gold aluminum phosphor**

IT **Phosphors**
(sulfide-type, for monochrome **cathode-ray** **tubes**,)

IT **7439-96-5**, uses and miscellaneous
RL: USES (Uses)
(calcium magnesium sulfide **phosphor** doped with, in mixture for **greenish yellow** or white **luminescence** in **cathode-ray** **tube**)

IT **7440-57-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** mixture from **zinc sulfide** doped with, for **greenish yellow** or white **luminescence** in **cathode-ray** **tube**)

IT **7429-90-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** mixture from **zinc sulfide** doped with, for **greenish yellow** or white **luminescence** in **cathode-ray** **tubes**)

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** mixture from, for **greenish** **yellow** or white **luminescence** in **cathode** **-ray tubes**)

IT 7440-22-4, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide phosphor** **doped** with, in mixture for **greenish** **yellow** or white **luminescence** in **cathode** **-ray tube**)

IT 12032-36-9D, solid solns. with calcium **sulfide**
20548-54-3D, solid solns. with magnesium **sulfide**
RL: PRP (Properties)

(**zinc sulfide**-type **phosphor** mixed with **manganese**-doped, for **greenish yellow** or white **luminescence** in **cathode -ray tubes**)

L87 ANSWER 32 OF 37 HCA COPYRIGHT 2005 ACS on STN
104:59235 **Phosphors** for high-contrast **cathode ray tubes**. Ito, Takeo; Koike, Norio; Kawamata, Takamitsu; Tamaya, Masaaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60199092 A2 19851008 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-53519 19840322.

AB A **ZnS**-based **phosphor** powder is doped with a activator by primary calcination, then doped with Co or Fe 0.5-200 ppm and Ni 0.5-5 ppm by secondary calcination at a lower temperature to obtain a **green-luminescent phosphor**, and the **phosphor** thus prepared is coated on the inner wall of a bulb to give **cathode ray tubes**. The tubes show improved contrast, and are hence useful for color and monochrome displays. Thus, **ZnS** powder was **doped** with **Cu** 250 ppm by primary calcination for 2 h at 950° under N2, then doped with Co 10 ppm and Ni 2 ppm by secondary calcination for 2 h at 800° under N2 to obtain a **green-luminescent phosphor ZnS :Cu**, and the **phosphor** was then suspended in an aqueous solution containing (NH4)2Cr2O7 and poly(vinyl alc.). After coating the suspension on the inner wall of a bulb, the coated layer was patternwise exposed to UV light and developed with H2O to give a stripe-shaped **green-luminescent phosphor** layer, which showed a relative contrast 147 vs. 100 for a control **phosphor** layer composed of undoped **ZnS:Cu phosphor** alone.

IC ICM C09K011-56
ICS H01J029-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST **cathode ray tube** high contrast; **zinc sulfide green luminescence phosphor**; **gold** activation **zinc sulfide phosphor**; **copper** activation **zinc sulfide phosphor**; cobalt doping **zinc sulfide phosphor**; nickel doping **zinc sulfide phosphor**; iron doping **zinc sulfide phosphor**

IT **Phosphors**
(**green**-emitting, dopant for **zinc sulfide**-based, for high-contrast **cathode ray tubes**)

IT **7440-57-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by **copper** and, with nickel and cobalt or iron dopants for high-contrast **cathode ray**

tubes)
IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on **zinc sulfide** activated by, with nickel and cobalt or iron dopants for high-contrast **cathode ray tubes**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** based on, for high-contrast **cathode ray tubes**)
IT 7439-89-6, uses and miscellaneous 7440-48-4, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** doped with nickel and, for high-contrast **cathode ray tubes**)
IT 7440-02-0, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** doped with, for high-contrast **cathode ray tubes**)

L87 ANSWER 33 OF 37 HCA COPYRIGHT 2005 ACS on STN
104:59234 **Phosphors** for high-contrast **cathode ray tubes**. Ito, Takeo; Koike, Norio; Kawamata, Takamitsu; Tamaya, Masaaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60199091 A2 19851008 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-53518 19840322.
AB A **ZnS**-based **phosphor** powder is doped with an activator by primary calcination, then doped with Co 0.5-200 ppm by secondary calcination at a lower temperature to obtain a **green-luminescent phosphor**, and the **phosphor** thus prepared is coated on the inner wall of a bulb to give **cathode ray tubes**. The tubes show improved contrast, and are hence useful for color and monochrome displays. Thus, powdery **ZnS** was **doped** with **Cu** 250 ppm by primary calcination for 2 h at 950° under N2, then doped with Co 10 ppm by secondary calcination for 2 h at 800° under N2 to obtain a **green-luminescent phosphor ZnS:Cu**, and the **phosphor** was then suspended in an aqueous solution containing (NH4)2Cr2O7 and poly(vinyl alc.). After coating the suspension on the inner wall of a bulb, the coated layer was patternwise exposed to UV light and developed with H2O to give a stripe-shaped **green-luminescent phosphor** layer, which showed a relative contrast 120 vs. 100 for a control **phosphor** layer not doped with Co.
IC ICM C09K011-56
ICS H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
ST **cathode ray tube** high contrast;

zinc sulfide green luminescence phosphor; cobalt **copper zinc sulfide phosphor**

IT **Phosphors**
(**green**-emitting, **zinc sulfide**-based cobalt-doped, for high-contrast **cathode ray tubes**)

IT **1314-98-3**, uses and miscellaneous **1314-98-3D**, solid solns. with cadmium sulfide
RL: USES (Uses)
(**phosphors** based on, for high-contrast **cathode ray tubes**)

IT **7440-57-5**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** activated by **copper** and, with cobalt dopant for high-contrast **cathode ray tubes**)

IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** activated by, with cobalt dopant for high-contrast **cathode ray tubes**)

IT 7440-48-4, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** doped with, for high-contrast **cathode ray tubes**)

IT 1306-23-6D, solid solns. with **zinc sulfide**
RL: PRP (Properties)
(**phosphors**, for high-contrast **cathode-ray tubes**)

L87 ANSWER 34 OF 37 HCA COPYRIGHT 2005 ACS on STN
102:36429 Color **cathode-ray tube**. (Kasei Optonix, Ltd., Japan; Sony Corp.). Jpn. Kokai Tokkyo Koho JP 59136379 A2 19840804 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-10114 19830125.

AB A color **cathode-ray tube** contains a rare-earth **red phosphor** (e.g., (Y, Eu)2O2S), a **green phosphor** (e.g., **ZnS:Cu, Al**), and a blue **phosphor** (e.g., **ZnS**:Ag) which when irradiated with an electron beam forms a color image. The **red phosphor** contains an addnl. **phosphor** (M1-x-y,Eux,Cey)2O2S, where M = Y, Gd, La, and/or Lu, to increase the uniformity of the image. The exact composition and mixture ratio are given in detail.

IC C09K011-477; H01J029-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST rare earth oxide sulfide **phosphor**; **cathode ray tube phosphor** color

IT **Phosphors**
(for color **cathode-ray tubes**)

IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphor** from metal-doped, for **cathode-ray tube**)
IT 12031-43-5 12163-19-8 12339-07-0 12340-04-4
RL: PRP (Properties)
(**phosphor** from metal-doped, for color **cathode-ray tube**)
IT 7440-45-1, uses and miscellaneous 7440-53-1, uses and miscellaneous
RL: USES (Uses)
(yttrium oxide sulfide doped with, **phosphor**, for color **cathode-ray tube**)
IT **7429-90-5**, uses and miscellaneous 7440-22-4, uses and miscellaneous **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide doped** with, **phosphor**, for color **cathode-ray tube**)

L87 ANSWER 35 OF 37 HCA COPYRIGHT 2005 ACS on STN
101:201706 Slow electron-excitation type blue-emitting **phosphors** and **fluorescent display devices**.
(Futaba Denshi Kogyo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 58204087 A2 19831128 Showa, 5 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1982-87679 19820524.
AB Blue-emitting slow electron-excitable **phosphors** are composed of 20-99% blue-emitting **phosphors** and 1-80% bluish **green**-emitting **phosphors**. The blue emitting **phosphors** are preferably selected from **ZnS**:Ag, **ZnS**:Ag,**Al**, **ZnS**:**Zn**, (Zn1-xCdx)**S**:Ag and (Zn1-xCdx)S:Ag,**Al** ($3 < x < 0.2$), whereas ZnO:Zn is useful as the bluish **green**-emitting **phosphor**. A **fluorescent display device** prepared by using the **phosphors** is also claimed. The **phosphor** mixts. exhibit good emission efficiency.
IC C09K011-18; C09K011-10; C09K011-30
ICA C09K011-14; H01J029-30; H01J031-15
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 76
ST **phosphor** blue emitting **display device**; electron excitation **phosphor display device**; **fluorescent display device**; **zinc sulfide phosphor**; oxide zinc **phosphor**
IT **Luminescent** screens
(for **fluorescent** optical imaging devices, blue-emitting electron-excitation type **phosphor** mixts. for)
IT 1306-23-6D, solid solns. with **zinc sulfide**
RL: USES (Uses)
(**phosphors**, **doped** with silver and

aluminum, for **fluorescent display devices**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(silver and **aluminum** doped, **phosphors** containing, for **fluorescent display devices**)
IT 7440-66-6, uses and miscellaneous
RL: USES (Uses)
(zinc oxide **phosphor** doped with, for **fluorescent display devices**)
IT **7429-90-5**, uses and miscellaneous 7440-22-4, uses and miscellaneous
RL: USES (Uses)
(**zinc sulfide** type **phosphors** **doped** with, for **fluorescent display devices**)
IT 1314-13-2, uses and miscellaneous
RL: USES (Uses)
(zinc-doped, **phosphor** composition containing, for **fluorescent display devices**)

L87 ANSWER 36 OF 37 HCA COPYRIGHT 2005 ACS on STN
97:227602 **Cathode ray tubes** for color **televisions**. (Kasei Optonix, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57040836 A2 19820306 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-71858 19810513.
AB **Cathode ray tubes** for color **television** sets contain (1) blue-emitting **phosphors** of the formula SrS.xGa2S3:yCe3+ ($0.8 \leq x \leq 1.4$; $4 + 10\text{-}4 \leq y \leq 1 + 10\text{-}1$), (2) **green**-emitting **phosphors** of the formula **ZnS**: **Cu,Al** (10-5-10-3 g **Cu**/g **ZnS**, 10-5-10-3 g **Al**/g **ZnS**) and (Zn1-zCdz)**S**:CuAl [$z \leq 0.11$; **Cu**, **Al** 5 + 10-6-10-3 g/g (Zn,Cd)S], and (3) **red**-emitting **phosphors** selected from Y2O2S:Eu, Y2O3:Eu, and YVO4:Eu (10-2-1.5 + 10-1 g Eu/g **phosphor**). The SrS.xGa2S3:yCe **phosphors** show very little emission intensity saturation phenomena.
IC H01J029-20; C09K011-46
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73, 76
ST color **television cathode ray tube**; **phosphor cathode ray tube**; blue emitting **phosphor**; gallium strontium sulfide **phosphor**
IT **Cathode-ray tubes**
(**television**, color, blue-emitting cerium-doped strontium-gallium sulfide for)
IT 1314-96-1D, solid solns. with gallium sulfide 53238-24-7D, solid solns. with strontium sulfide
RL: USES (Uses)

(cerium-doped, blue-emitting **phosphors**, for color **television cathode ray tubes**)

IT 1306-23-6D, solid solns. with **zinc sulfide**
RL: USES (Uses)
(**copper** and **aluminum doped**, **green**-emitting **phosphors** for color **television cathode ray tubes**)

IT **1314-98-3**, properties
RL: PRP (Properties)
(**copper** and **aluminum** doped, **green**-emitting **phosphors** for color **television cathode ray tubes**)

IT 12340-04-4 13566-12-6
RL: USES (Uses)
(europium-doped, **red**-emitting **phosphors** for color **television cathode ray tubes**)

IT 1314-36-9, properties
RL: PRP (Properties)
(europium-doped, **red**-emitting **phosphors** for color **television cathode ray tubes**)

IT 7440-45-1, uses and miscellaneous
RL: USES (Uses)
(gallium strontium sulfide **phosphors** doped with, blue-emitting, for color **television cathode ray tubes**)

L87 ANSWER 37 OF 37 HCA COPYRIGHT 2005 ACS on STN
95:178716 Adherence of a **phosphor**-photobinder layer to a glass support. Harper, Stanley A. (RCA Corp. , USA). U.S. US 4284694 19810818, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1980-143765 19800425.

AB A **luminescent screen** for a **cathode-ray tube** is prepared by coating a clean glass surface with an aqueous solution containing poly(vinyl alc.) and a H2O-soluble zirconyl compound to form a precoating, overcoating with a **phosphor**-photopolymerizable binder layer, exposing, and developing by the slurry direct-photog. process. By employing the precoating to the glass surface, the subsequently deposited **phosphor** coating exhibits improved adherence to the surface. Thus, a solution comprised of poly(vinyl alc.) (87% hydrolyzed) 0.1, zirconyl nitrate 0.02, and H2O 99.88% was coated on the inner surface of a glass 25-V faceplate panel of a color TV picture tube, dried in air by IR heat, overcoated with a photosensitive composition comprised of 10% poly(vinyl alc.) 233, a 45% aqueous solution of an acrylic polymer 13, 10% Na2Cr2O7 14, **green**-emitting **Cu**-activated Zn-Cd sulfide particles 292 and H2O 402 g at 4.0 mg/cm2 of the **phosphor** particles, dried, exposed through an apertured mask to a UV source, and developed by spraying and

flushing with H2O to give a **luminescent** screen of excellent **phosphor** layer adherence.

IC G03C005-00
NCL 430023000
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 76
ST **luminescent screen cathode ray tube**; zirconyl **compd** precoating **luminescent screen**
IT **Luminescent screens**
(for **cathode-ray tubes**, precoating containing poly(vinyl alc.) and zirconyl compound for, for increased adhesion of photohardened **phosphor** coating to glass supports)
IT Acrylic polymers, uses and miscellaneous
RL: USES (Uses)
(photopolymerizable composition containing **phosphors**, sodium dichromate and, for **luminescent screens** for **cathode-ray tubes**)
IT 13826-66-9
RL: USES (Uses)
(adhesion-improving layers containing poly(vinyl alc.) and, for **luminescent screens** for **cathode-ray tubes**)
IT 9002-89-5
RL: USES (Uses)
(adhesion-improving layers containing zirconyl nitrate and, for **luminescent screens** for **cathode-ray tubes**)
IT **1314-98-3**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **copper**-doped mixture of cadmium sulfide and, for **luminescent screens** for **cathode-ray tube**)
IT 1306-23-6, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **copper-doped** mixture of **zinc sulfide** and, for **luminescent screens** for **cathode-ray tubes**
)
IT **7440-50-8**, uses and miscellaneous
RL: USES (Uses)
(**phosphors** from **zinc sulfide** -cadmium sulfide mixts. doped with, for **luminescent screens** for **cathode-ray tubes**
)
IT 10588-01-9
RL: USES (Uses)
(photopolymerizable binder coating compns. containing acrylic polymers and, for **cathode-ray tube luminescent screens**)

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